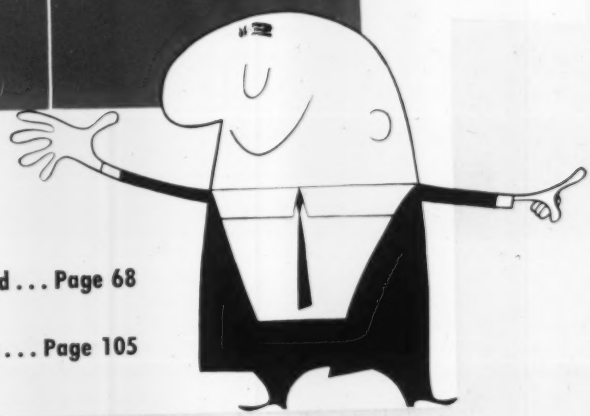
JUNE 2, 1958

STEEL
The Metalworking Weekly

A PENTON PUBLICATION

HOW TO BALANCE INVENTORIES

Page 35



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✔ Stampers Predict Upswing . . . Page 105

it's mainly a matter of TIMING!

But WHEN to replace a machine depends on more than its age

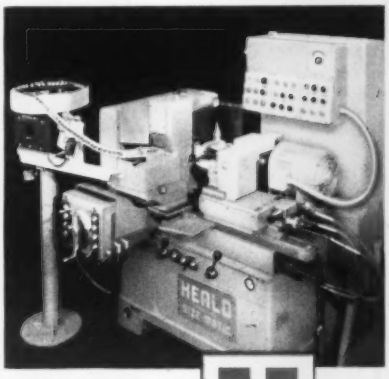
YEARS ALONE don't tell you when a machine has reached retirement age. In fact the age of a machine may be a relatively minor factor in computing the time at which it should be replaced. Some old machines may still have many years of economically productive life. While more recent ones, of a different type, may have already outlived their profitability in your plant.

It depends on many variable factors—including the comparative efficiency of the proposed new machine, and any design improvements which will become available in the foreseeable future. But whatever the replacement conditions, proper timing can mean the difference between *profit* and *loss*. Too early is just as bad as too late. But there is *one* mathematically predictable time when replacement will cost you the least amount of money. This replacement minimum can't be determined by guesswork, intuition, or rule-of-thumb. It requires precise methods of replacement analysis, based on proved economic principles.

Our sales engineers are well experienced in making such obsolescence studies. And they will be glad to do the same for you. Similar studies by Heald engineers have pointed the way to many important *savings*.

For Example: A manufacturer of automotive parts was using two ten-year-old Heald Model 81 Centerless Internals for grinding a blind hole in steel bushings. A cost analysis showed that two new Heald Model 180 Centerless Internals, like that shown at the right, could do the *same job* at a saving of more than 66% in total operating cost. The replacement of the two old machines with two new ones resulted in the production and cost savings shown below.

	2 Old Machines	2 New Machines
Parts per hour	276	426
Parts per year (Req'd. Prod.)	552,000	552,000
Direct Labor, per year	$ 7,252	$ 3,746
Scrap Losses, per year	$ 4,182	$ 705
Annual Maintenance	$ 2,752	$ 250
Annual Operating Cost	$14,186	$ 4,701
Annual Saving for New Machines		**$9,485**



YOU pay for obsolescence. Replacement pays for itself!

THE HEALD MACHINE COMPANY

Subsidiary of The Cincinnati Milling Machine Co.

Worcester 6, Massachusetts

Chicago • Cleveland • Dayton • Detroit • Indianapolis • New York

HEALD

Tool Steel Topics

BETHLEHEM STEEL

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

Export Distributor: Bethlehem Steel Export Corporation

Hundreds of red-hot wrenches per hour formed and broached with 57 HW

Forming and broaching twelve-point openings in box wrenches from red-hot alloy steel bars is a job that calls for a hot-work tool steel having a high red-hardness . . . good resistance to abrasion . . . and the ability to take shock.

Our 57 HW grade meets these tough requirements—and then some—at P & C Tool Co., Milwaukie, Oregon. Hardened to Rockwell C-50, the die turns out wrenches from rounds of special alloy steel, similar to 4140 grade. After producing approximately 3500 wrenches, the punches and dies are polished with an emery roll, putting them in good shape for some more of the same rugged service.

57 HW is our 9 pct tungsten type of hot-work tool steel. Hardened in air, it has both high red-hardness and high abrasive-resistance. Moreover, it offers good resistance to heat-checking, and more than holds its own in resisting shock.

Typical Analysis

Carbon 0.35	Tungsten 9.35
Chromium 3.25	Vanadium 0.50

57 HW is ideal for a variety of hot-work applications—everything from hot headers to spike cutters, from punch-and-die inserts to nut piercers. Why not let a trial run convince you? Your Bethlehem tool steel distributor is awaiting your call.

BETHLEHEM TOOL STEEL ENGINEER SAYS:

Take a Good Look At Your Grinding Marks

Some people are surprised to learn that grinding marks often play a big part in determining tool life. This is especially true with deep-hardening dies and punches that have a moving contact with metals under high pressures. Although the surface finish of a ground tool may appear smooth, it actually has a saw-tooth contour. Material moving in the same direction as the grinding marks shows less tendency to "pick-up" or adhere, than material which travels across the grinding marks.

This "pick-up" of material is not desirable on such tools as drawing dies. Here it is advantageous to grind in the same direction as the material is to move. On some types of tools this kind of grinding is difficult, but because of the longer tool life obtained, the effort is worthwhile.

Punches which have been ground longitudinally outlast those which have been ground circumferentially, though the latter is by far the most common method. Here, too, longitudinal grinding pays off, even though it may be inconvenient.

It's well to give serious thought to the direction of grinding on tools. It can make a big difference in getting the best possible tool life.

New Booklet on Bearcat Tool Steel

It's just off the press—a completely new two-color booklet on Bearcat tool steel. The booklet is profusely illustrated, and explains fully why Bearcat is such an outstanding grade for a wide variety of shock applications. If you would like to have a copy for reference, write to Publications Dept., Bethlehem Steel Company, Bethlehem, Pa. Ask for Booklet 458.

Check your requirements against these

Wallace Barnes Cold-rolled Specialty Steels

Furnished in these carbon grades:

1.25 – 1.32% .90 – 1.05% .70 – .80% .59 – .74% .48 – .55%

ANNEALED AND HARD-ROLLED

Thickness

.003 – .010″	in widths 1/8 to 6 1/4″	.036 – .049″	in widths 3/8 to 13″
.011 – .014″	" " 3/16 to 11″	.050 – .064″	" " 1/2 to 13″
.015 – .019″	" " 3/16 to 13″	.065 – .093″	" " 3/4 to 6 1/4″
.020 – .035″	" " 1/4 to 13″	.093 – .125″	" " 3/4 to 6 1/4″

HARDENED AND TEMPERED

Scale-free or scaleless; polished*; polished and blued*; polished and strawed*

Thickness

.003 – .004″	in widths 1/8 to 2″	.031 – .035″	in widths 1/4 to 7″
.005 – .007″	" " 1/8 to 3″	.036 – .040″	" " 3/8 to 7″
.008 – .009″	" " 1/8 to 4″	.041 – .049″	" " 3/8 to 6″
.010 – .014″	" " 3/16 to 5″	.050 – .060″	" " 1/2 to 4″
.015 – .019″	" " 3/16 to 7″	.061 – .064″	" " 1/2 to 3″
.020 – .025″	" " 1/4 to 8 1/2″	.065 – .093″	" " 3/4 to 3″
.026 – .030″	" " 1/4 to 8″		

*Maximum width for polishing in .010 – .030 thickness ranges is 5 in.

Facilities for processing alloy steels also are available.

Standard sizes normally available for prompt shipments.

Write for a copy of "Physical Property Charts" that give performance characteristics of .90 – 1.05% and .70 – .80% carbon grades.

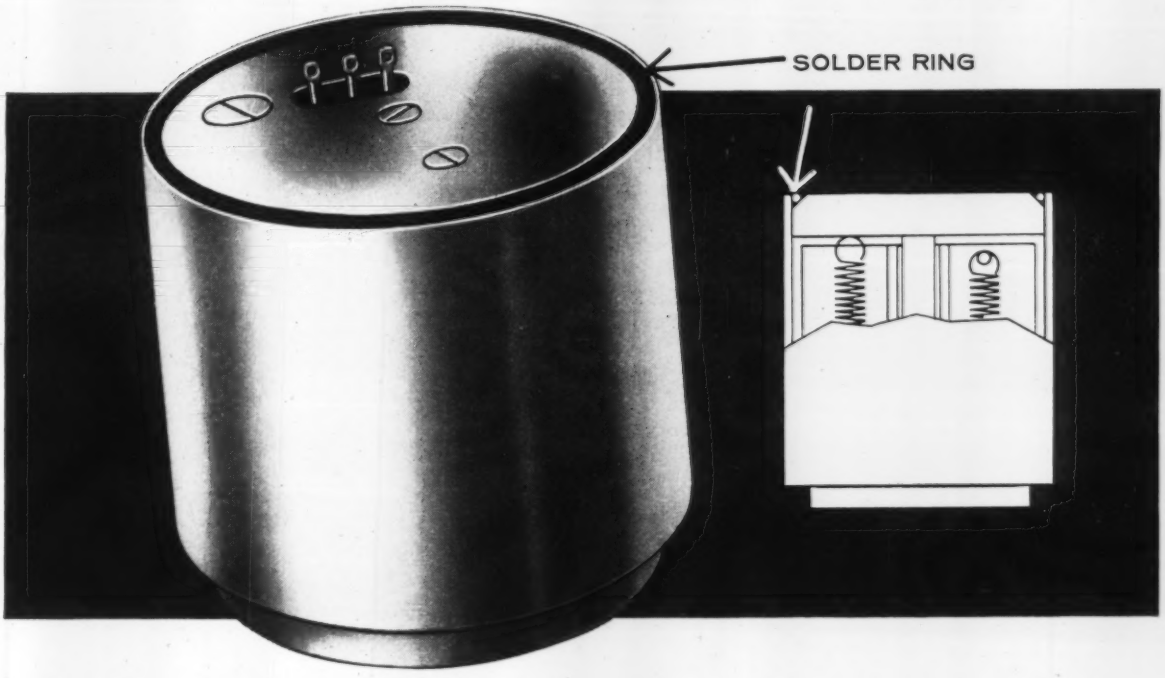
Wallace Barnes Steel Division

Bristol, Connecticut

Associated Spring Corporation

Precision soldering 7 Times Faster...

with TOCCO* *Induction Heating*



When G. M. Giannini and Co., Inc., Pasadena, California, switched from old-fashioned methods to TOCCO Induction Heating they increased production of these high-precision accelerometers from 4 to 30 per hour—with a commensurate *decrease* in production costs.

Here's what a Giannini official has to say about the TOCCO installation: "Prior to using TOCCO for this purpose, we had tried soldering irons, normal torches, resistance sealing, and even threaded screw fittings, with uniformly poor results. Essentially, the TOCCO unit has permitted us to build, in production quantities, oil-filled hermetically sealed units that could not be produced in any other way."

Whether your production bottleneck involves soldering, brazing, heat treating or heating for forming it pays you to investigate TOCCO as an economical way to do it better, faster and at lower cost.

THE OHIO CRANKSHAFT COMPANY

Mail Coupon Today— NEW FREE Bulletin

The Ohio Crankshaft Co. • Dept. S-6, Cleveland 5, Ohio

Please send copy of "Typical Results of TOCCO Induction Brazing and Soldering".

Name_____

Position_____

Company_____

Address_____

City_____ **Zone**____ **State**_____

Durable answer to you who have asked for a

husky sectional belt conveyor

ANSWERS STORAGE PROBLEM — Using Link-Belt Pre-Bilt belt conveyors to stockpile material 40 feet high, this efficient layout using a radial belt stacker has overcome the restrictions of limited area. System has to operate continuously up to 60 hours, or more.

LINK-BELT Pre-Bilt Belt conveyors handle up to 1500 tons per hour

Per pound of weight, no other sectional belt conveyor tops the strength and rigidity of Link-Belt Pre-Bilt Sectional Belt Conveyors.

For full information on these durable conveyors up to 36 in. wide—with drives up to 40 hp, 24 and 42-inch truss depths or simple channel stringer type — contact your nearby Link-Belt office.

LINK-BELT

BELT CONVEYOR EQUIPMENT

LINK-BELT COMPANY: Executive Offices, Prudential Plaza, Chicago 1. To Serve Industry There Are Link-Belt Plants and Sales Offices in All Principal Cities. Export Office, New York 7; Canada, Scarboro (Toronto 13); Australia, Marrickville (Sydney), N.S.W.; South Africa, Springs. Representatives Throughout the World.

14,787

From selection to erection . . . you save every step of the way with quality pre-engineered equipment

NO DETAILED DRAWINGS—From standardized data, a Link-Belt engineer will prepare an "on-the-site" quotation covering the components for your needs.

LOWER PURCHASING COSTS—Interchangeability and standardization reduce costs and speed selection of parts . . . all available from Link-Belt.

NO COSTLY DELIVERY DELAYS—PRE-BILT conveyors are built at eight strategic locations and are shipped from the plant nearest you to assure prompt delivery.

QUICK LOW-COST INSTALLATION—Simple construction and shop-assembled components facilitate field assembly and installation by your own or Link-Belt erectors.

MINIMUM OPERATING COST—These conveyors require a minimum of power for the tonnages of materials handled. Maintenance normally consists only of lubrication.

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June 2, 1958
Vol. 142, No. 22

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You must plan and do the job in an orderly way. Otherwise, you get caught overstocked when a recession hits, understocked when an upturn comes along. Both situations hurt business generally.

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STEEL, the metalworking weekly, is selectively distributed without charge to qualified management personnel with administrative, production, engineering, or purchasing functions in U. S. metalworking plants employing 20 or more. Those unable to qualify, or those wishing home delivered copies, may purchase copies at these rates: U. S. and possessions and Canada, $10 a year; all other countries, $20 a year; single copies, 50 cents. Metalworking Yearbook issue, $2. Published every Monday and copyright 1958 by Penton Publishing Co., Penton Bldg., Cleveland 13, Ohio. Accepted as controlled circulation publication at Cleveland, Ohio.

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Monroe Shock Absorbers rely on Precision Performance of YODER TUBE MILLS

After 15 years of continuous operation the Yoder Type-M Electric-Resistance Weld Tube Mill shown here, is still producing precision tubing for the Monroe Auto Equipment Co., Monroe, Michigan. Yoder produced tubing is the basic component of the famous "Monro-Matic" shock absorber. Measuring 2 1/64" outside diameter (plus several other sizes) the tubing is made from 22 gauge strip in one continuous operation . . . it is automatically cold-roll formed, welded and cut to pre-determined lengths.

This typical installation of a Yoder tube mill exemplifies the accuracy, dependability and production economies of Yoder-made tubing. If your business requires pipe or tubing, ferrous or non-ferrous, in sizes from 1/4" to 26" diameters, there is a Yoder mill designed to produce it economically, efficiently and accurately.

THE YODER COMPANY
5502 Walworth Ave. • Cleveland 2, Ohio

Check into the many cost-saving advantages of operating a Yoder pipe or tube mill . . . write for the fully-illustrated 88-page Yoder Tube Mill Book . . . it is yours for the asking.

ENGINEERING YODER MANUFACTURING
PIPE AND TUBE MILLS
(ferrous or non-ferrous)

behind the scenes

Note from Britain

In the course of a long, undistinguished and sinful career, we had been obliged, on occasion, to consider editorially such diverse items as crows, spiders, lacrosse players, alligators, and cartoonists, but until today we had never messed seriously with frogs. It's rather embarrassing to confess this indifference, particularly after receiving a letter from Editor-in-Chief Irwin Such from London. Irwin was on his way to Copenhagen to join a steel industry group headed for Russia, but he took time out to send us a clipping from the *London Times*.

"British frogs," said the clipping (in clipped accents, of course), "will be represented in the finals of a 26-nation contest at Angels Camp, Calif., today to find this year's champion jumping frog of the world. One of Britain's entries, Cap'n Beaudry II, owned by Mr. and Mrs. Maurice Seymour of Polperro, Cornwall, has qualified for the finals with a leap of 12 ft."

How did this strike Mr. Such? Poised before his plunge into darkest Russia, mentally alert, vibrating with economic and industrial observations on Western Europe, he paused nevertheless to make a thoughtful comment. "I've just made the startling discovery," he wrote, "that we have been, overlooking an important international sport: Frog jumping!"

Poltergeists at Work?

Several days ago, Associate Managing Editor John Morgan assigned Assistant Editor H. Glenn Canary to cover a local meeting of the AMA. We have related at other times that John seems to be the plaything of poltergeists. Strange things happen to him. Either in Wales or early America, there is a strong supposition that certain of his ancestors innocently soured milk and drew lightning.

Receiving his orders, Mr. Canary saluted smartly and took off. Ten minutes later, he heard a screeching, crashing sound behind him, so he turned around. Indeed, under those conditions, who wouldn't? Well, about 5 ft from where he was standing an automobile was wrapped around a fire hydrant. It had gone out of control, leaped the curb, and crashed into the fireplug. If there hadn't been any obstruction, there probably wouldn't be any Mr. Canary, either.

"I was all shook up," Glenn declared with commendable aplomb. "When I got to the hotel where the AMA meeting was, I didn't put up any argument when I was informed that the meeting was a closed deal. I crossed the lobby and stepped outside, and just as I got clear, part of the ceiling crashed to the floor of the vestibule. I think," he murmured, "that I jumped 6 ft, straight up."

Upon receipt of this intelligence, we repaired at once to Mr. Morgan's office. Were his hoodoos contagious? Was his jinx transferable? Unfortunately, he wasn't available for an interview. "Mr. Morgan," explained one of his assistants, "is home sick with the mumps!"

Inventory Control

"How To Balance Inventories" (Page 35) is a subject which, if fully understood, could be the cornerstone of universal prosperity. STEEL's article explores some of the methods open to industry to control inventories. Inventory adjustment problems are among the main roots of booms and recessions, so it's important to management to study problems like these: What does it cost to overstock or understock? What can be done to control underbuying and overbuying? Is control more difficult on the up or down side?

The merchant who overstocks lawn furniture in the face of a cold summer, and the automaking firm which commits itself to mountains of chrome in the face of an increasingly conservative market are brothers in mistaken judgment. "How To Balance Inventories" considers the subject as a whole, and suggests how to patch up errors of omission and commission.

Calling All Decoders

Every once in a while, some of our patient readers request cryptograms. Well, here's a message in code. We asked our Linotype Dept. to set it in 10-point Spartan Bold condensed capitals, with punctuation marks, and odds and ends—but all mixed up, naturally.

The message is an extract from an address delivered to business paper publishers by Charles H. Brower, president of BBD&O, advertising agency. (You see, we wanted to give you something worth decoding.) Ready? Here we go:

★4 D?F6 ?J !D$H★A! 6?L!® 6B★F ★F 6B$!2$?J 6B$ B!9J-L?4$ 3?8, 6B$ $H! ?J 6B$ 2??J-?JJ, 6B$ B★2B 6★L$?J D$L★?AH★6®. 6B$ 9!4L JH?D A?!F6 6? A?!F6 ★F $43?®★42 ! F6!DE$L$!K!® JH?D H$FE?4F★8★-9★6®.

Shrdlu

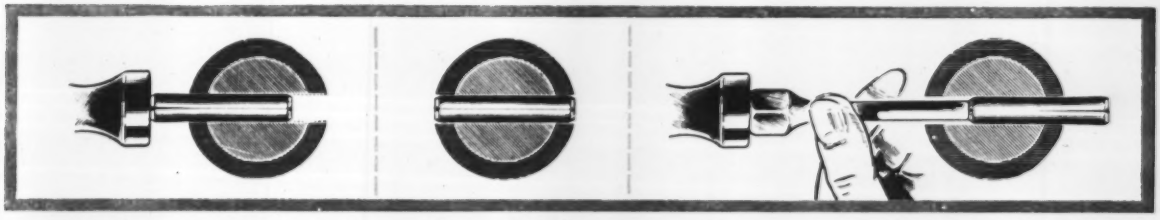
(Metalworking Outlook—Page 29)

what makes this fastener DIFFERENT?

Several things. Rollpin® is a slotted, chamfered, cylindrical spring pin which drives easily into a hole drilled to normal production standards. It locks securely in place, yet can be drifted out and reused whenever necessary. This eliminates special machining, tapping, and the need for hole reaming or precision tolerances. Rollpin replaces taper pins, straight pins and set screws; for many applications it will serve as a rivet, dowel, hinge pin, cotter pin or stop pin.

And here's another difference that makes Rollpin the quality fastener in the field: ESNA's quality control builds consistent strength and performance into every Rollpin. Rollpin is uniform as to shear strength, dimensions, hardness, and insertion and removal forces.

HOW YOU INSERT IT



Drives easily by hammer, arbor press, or air cylinder and can be readily adapted to an automatic hopper feed. Requires only a standard hole, drilled to normal production-line tolerances.

Locks securely in place without using a secondary locking device; won't loosen despite impact loading, stress reversals, or severe vibration.

Removes readily with a drift pin without damage to pin or hole, can be used again and again in original hole

HOW YOU SAVE

You pay less for Rollpins than for most tapered, notched, grooved or dowel pins. Installation costs are substantially less than for any fastener requiring a precision fit or secondary locking operations.

Because of their tubular shape, Rollpins are lighter than solid pins. Production maintenance is reduced with Rollpins: they do not loosen and because of their spring action they tend to conform to the drilled hole in which they're inserted, without material hole wear, eliminating the necessity of re-drilling or using oversize pins.

MATERIALS AND SIZES

Standard Rollpins are made from carbon steel and Type 420 corrosion resistant steel. They're also available in beryllium copper for applications requiring exceptional resistance to corrosive attack, good electrical, anti-magnetic, and non-sparking properties. Stock sizes range from .062" to .500" in carbon and stainless steels.

ROLLPIN®

ELASTIC STOP NUT CORPORATION OF AMERICA

R40-660 2330 Vauxhall Road, Union, New Jersey

Please send me the following free fastening information:

Rollpin Bulletin
Elastic Stop nut Bulletin

Here is a drawing of our product. What self-locking fastener would you suggest?

Name _____ Title _____

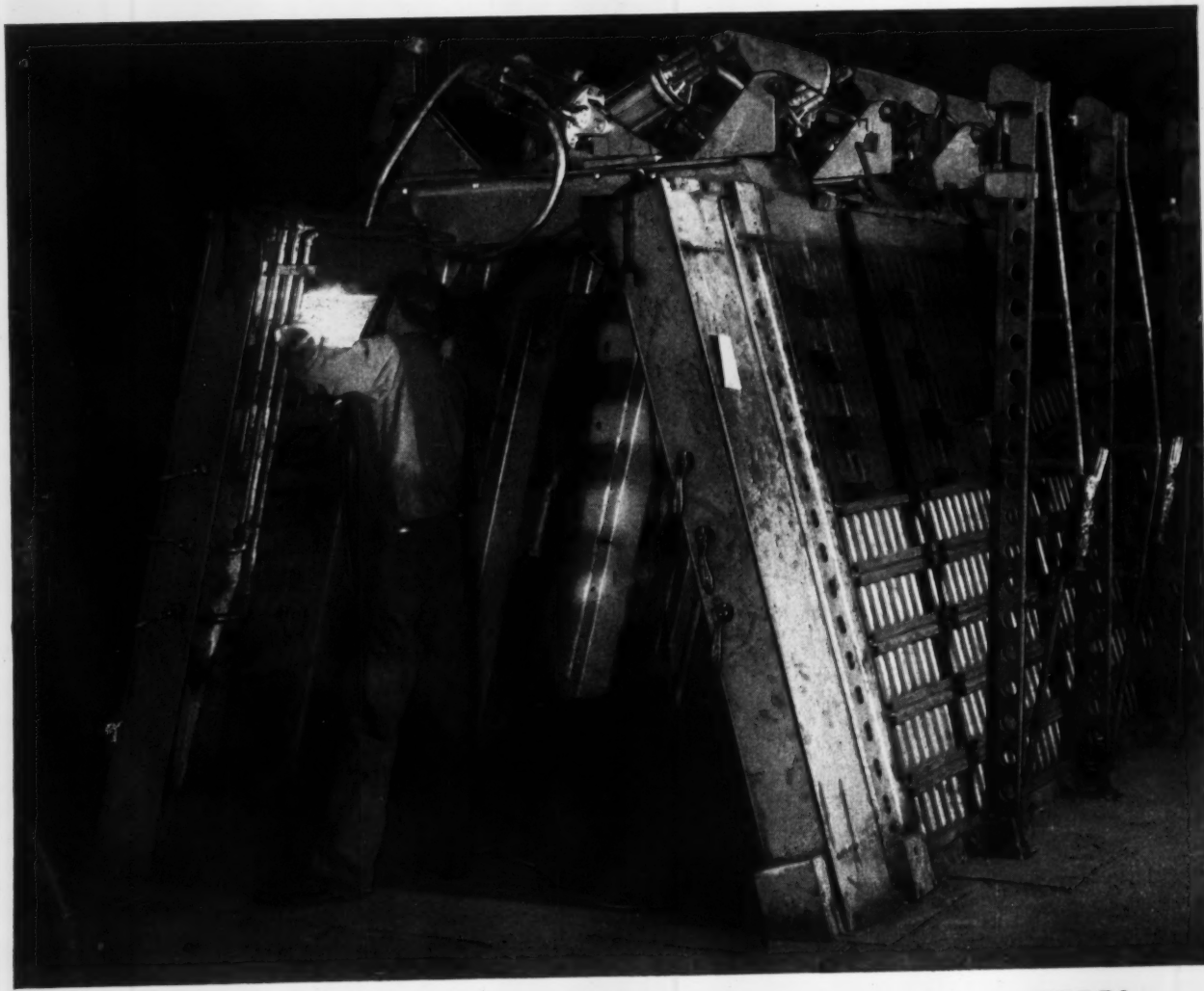
Firm _____

Street _____

City _____ Zone _____ State _____

For whatever you make...

N-A-X® HIGH-TENSILE STEEL BUILDS IN STRENGTH WITH LONGER LIFE



STEEL

Today's emphasis on fast mechanized freight car loading and unloading brings the superior qualities of N-A-X HIGH-TENSILE steel into sharp focus.

For boxcar flooring, increased mechanization means bigger, heavier and faster moving lift trucks, added abuse from still more weight concentration. For gondola flooring, increased mechanization means still more load impact and abrasion to go with the deteriorating effects of constant exposure to weather.

N-A-X HIGH-TENSILE steel solves these troublesome problems like none other. Used in Stran-Steel Corporation's famous N-S-F®, nailable steel flooring, N-A-X HIGH-TENSILE builds in extra strength, adds longer life. And top resistance to impact and atmospheric corrosion, plus ready weldability, makes N-A-X HIGH-TENSILE exceptionally suited to the special needs of railroad equipment manufacturers and railroads alike. No wonder sixty-three of the nation's leading railroads have ordered N-S-F for their freight cars.

CHECK THESE IMPORTANT ADVANTAGES FOR YOUR JOB:

N-A-X HIGH-STRENGTH steels—both N-A-X HIGH-TENSILE and N-A-X FINEGRAIN—compared with carbon steel, are 50% stronger • have high fatigue life with great toughness • are cold formed readily into difficult stampings • are stable against aging • have greater resistance to abrasion • are readily welded by any process • offer greater paint adhesion • polish to a high luster at minimum cost.

Although N-A-X FINEGRAIN'S resistance to normal atmospheric corrosion is twice that of carbon steel, N-A-X HIGH-TENSILE is recommended where resistance to extreme atmospheric corrosion is important.

For whatever you make, from steel shop boxes to steel freight cars, with N-A-X HIGH-STRENGTH steels you can design longer life, and/or less weight and economy into your products. Let us show you how.

Here again N-A-X HIGH-TENSILE *steel proves its ready weldability. To manufacture Stran-Steel Corporation* N-S-F®, *nailable steel flooring, no less than* eight *separate welds between each two channels are required.*

Tough N-S-F®, *nailable steel flooring of* N-A-X HIGH-TENSILE, *has already won wide acceptance with leading railroads everywhere. So much so, in fact, that more than 50% of all new boxcars now being built are ordered with it.*

This typical modern fork-truck with its giant newsprint roll weighs a whopping 5,500 pounds! N-A-X HIGH-TENSILE *takes even this kind of concentrated abuse easily, lasts for the life of the car.*

N-A-X HIGH-STRENGTH STEELS

N-A-X Alloy Sales Division, Dept. B-5

GREAT LAKES STEEL CORPORATION

Detroit 29, Michigan • Division of

NATIONAL STEEL CORPORATION

N-A-X Alloy Sales Division, Dept. B-5
Great Lakes Steel Corporation, Detroit 29, Michigan

☐ Please send me 12-page illustrated technical catalog on N-A-X HIGH-STRENGTH steels.

☐ Please have your representative contact me.

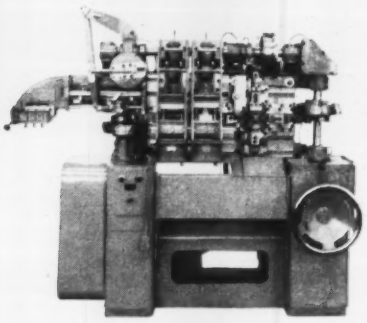
Name_____ Title_____

Company_____

Street_____

City_____ Zone____ State_____

THE FIRST ENTIRELY NEW FOUR-SLIDE IN FIFTY YEARS!



A development of industry-wide importance is the Torrington Verti-Slide—a new vertical 4-slide that is the first major innovation in the basic field of wire and strip forming equipment in half a century!

The Verti-Slide was designed to meet a serious need for greater versatility, lower tooling cost, faster set-up time and reduced floor space. We urge you to investigate the new Torrington Verti-Slide in detail.

THE TORRINGTON MANUFACTURING COMPANY

TORRINGTON, CONNECTICUT • VAN NUYS, CALIFORNIA • OAKVILLE, ONTARIO

LETTERS
TO THE EDITORS

Agrees with Depreciation Stand

Please forward a copy of the article, "Let's Leap to Recovery with Bold Action on Depreciation" (Apr. 28, Page 56). I heartily agree with your philosophy on capital depreciation and hope that you will continue this battle until needed changes are accomplished.

R. C. Morris

District Sales Office
Refractories Div.
Babcock & Wilcox Co.
Chicago

Excellent Job of Abstraction

My compliments to the editor who abstracted my paper, "Basic Guides to Steel Quality" (Apr. 28, Page 106). It is an excellent job of presenting the essentials and emphasizing the main theme.

T. P. Davis

Statistical Quality Control Engineer
Allegheny Ludlum Steel Corp.
Watervliet, N. Y.

Article Helps Purchasing Agent

Please send a copy of your article, "Will Steel Prices Rise?" (May 12, Page 45). From what we have seen, you are the first to publish a story on the increase of steel prices. Articles such as these are a great help to purchasing departments. Keep up the good work.

H. E. Shoulfler

Assistant Purchasing Agent
Canning Machinery Div.
Food Machinery & Chemical Corp.
Hoopeston, Ill.

Interest in Missile Article

An article on "Fabricating the Redstone Missile" appeared in the Jan. 20 issue (Page 66). We believe that we were connected indirectly with this project and would appreciate a copy of the article.

T. E. Schulz

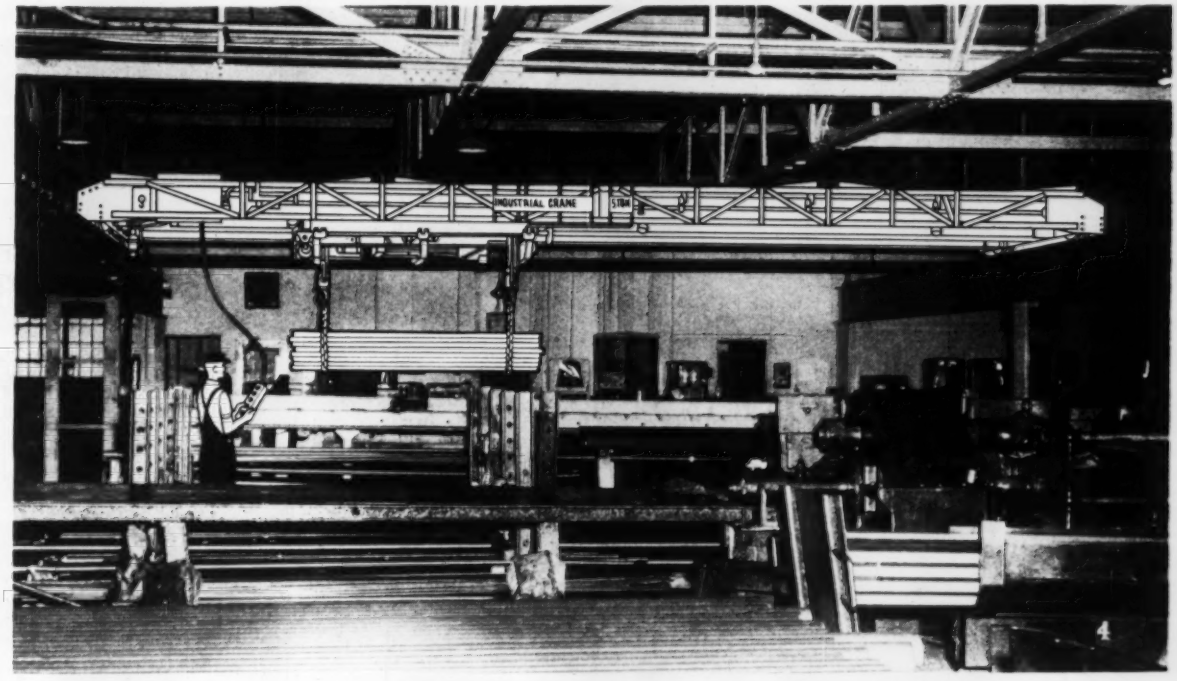
George W. Gates & Co. Inc.
Franklin Square
Long Island, New York

Copper Weld Series: Beneficial

I find your five-part series, "How To Weld Copper and Its Alloys," interesting and beneficial. I would like two additional copies of Part 1 and one each

(Please turn to Page 12)

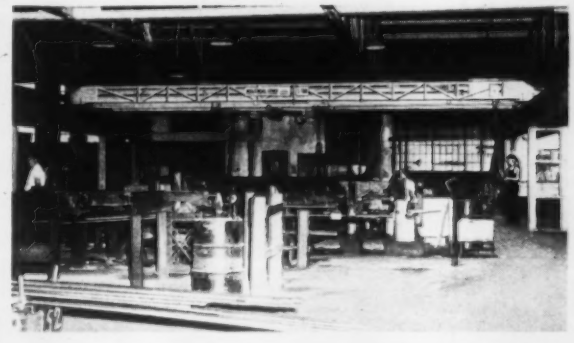
Cuts handling costs 80% with 2 cranes by Borg-Warner® INDUSTRIAL CRANES



efficient handling, better housekeeping make big savings

Inefficient materials handling methods can eat up profits in a hurry! This plant installed two 5-ton top running cranes by **Borg-Warner Industrial Cranes.** They found they could handle more cold-rolled steel in and out of storage and during processing with their B-W cranes than they could with former methods. At the same time it cost them only a fifth as much to handle *a greater volume!* Good housekeeping and more efficient handling speed up all departments resulting in a more profitable operation and better service to customers.

Whatever your materials handling problems it will pay you to talk them over with a **Borg-Warner Industrial Cranes** representative.



Two top-running motor-driven cranes

Operating on self-supported runways independent of the roof structure both double-girder cranes are floor operated by push-button control. Each crane is equipped with an underhung double hook trolley especially suited for handling bar stock.

Find Your Nearest Distributor Under CRANES In The Yellow Pages

Distributors in all principal industrial cities.

Industrial® CRANES

Design it better . . . Make it better.

INGERSOLL PRODUCTS® B-W BORG-WARNER

Borg-Warner® INDUSTRIAL CRANES

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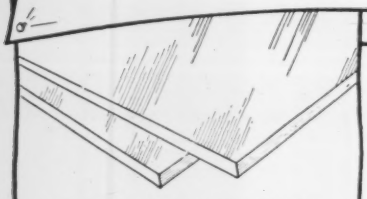
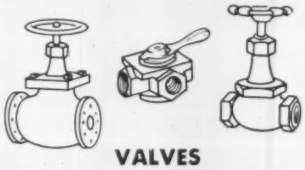
PLUS ITEMS
from your Whitehead Metals "Supermarkets"



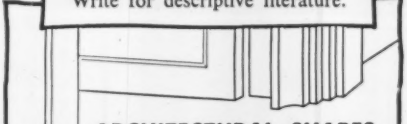
TOOL AND JIG PLATES
Of Alcoa Aluminum, they are stress relieved, non-porous, corrosion-resistant, easily machined. Available in standard size (48" X 96") in 13 thicknesses; or cut to your specifications. Folder available.

WELDING ROD
One-stop service for all you need in Aluminum, Copper Alloys, Nickel Alloys and all major types of welding rod and wire. A full line of soft solders and silver brazing alloys, too. Technical service and complete literature on request.

FOUNDRY ALLOYS
Over 100 different types—largest selection in the industry—available in handfuls or carloads off-the-shelf. Technical service, too. Write for "Foundry Alloy" Bulletin FA1.



VALVES
All major types are available from stock in Aluminum, Inconel, Monel, Nickel and Stainless Steel (and plastics, too). Write for descriptive literature.



ARCHITECTURAL SHAPES
Copings, gravel stops and door saddles are just a few of more than two hundred Alcoa aluminum shapes available off the shelf, and illustrated in booklet titled "Shapes." Monel, Stainless and Copper roofing items complete the Whitehead line of architectural materials on hand.

These "Plus Items" and many more are available in addition to a wide selection of corrosion-resistant sheet, rod and tube.

All told, there are more than 20,000 items distributed and serviced by Whitehead. All are available, off-the-shelf, from the nine Whitehead Metal "Supermarkets." All are the products of such leading producers as Alcoa, Anaconda, Inco & Crucible Steel to name just a few.

When you call Whitehead you get fast service, and frank, unbiased help in selection. Technical service when you need it. Add it up and you'll find it pays to

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LETTERS

(Concluded from Page 10)

of Parts 2, 3, and 4, for our welding department.

S. R. Caiazzo
Assistant Director of Engineering
Pusey & Jones Corp.
Wilmington, Del.

Wants Personal Copy

I would appreciate a personal copy of your timely article, "Managing Defensework for Profit" (Apr. 14, Page 125).

N. E. Berkholtz
Process Engineer
Ordnance Div.
Minneapolis-Honeywell Regulator Co.
Hopkins, Minn.

Brazing Heat-Resistant Alloys

We would like three copies of your excellent article, "Brazing Alloys Tackle Heat Barrier" (May 19, Page 140). If you do not have three, we will settle for one.

Ardelle Glaze
President
Fort Wayne Metals Inc.
Ft. Wayne, Ind.

Management To See Article

We found your article, "Preview of Space Age Metals" (May 5, Page 86), interesting and informative. We would like six copies for our management group.

John A. Boyd
Assistant Sales Manager
Wallingford Steel Co.
Wallingford, Conn.

Article To Aid TVA

I will appreciate a copy of the article, "Listen to Your Employees" (Apr. 21, Page 68). It is excellent and should be a big help.

E. M. West
Assistant Chief
General Procurement Branch
Tennessee Valley Authority
Chattanooga, Tenn.

Buyer Requests Guide

I believe your compilation, "A Guide to Tool Steels & Carbides," (Apr. 21 insert), could be profitable to our company. Could you send me a copy?

Virgil E. Butler
Buyer
R. G. LeTourneau Inc.
Longview, Tex.

Finds Food for Thought

Please forward a copy of your excellent article, "Let's Leap to Recovery with Bold Action on Depreciation" (Apr. 28, Page 56). As in all your articles, I found much food for thought.

J. M. Kreuttner
Anaconda Wire & Cable Co.
Hastings-on-Hudson, N. Y.

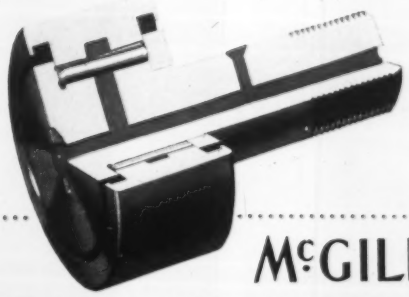
only McGILL® sealed CAMROL® cam followers give you . . .

effective sealing

prelubrication

high radial and shock capacity

in a full range of sizes



Effective sealing of the CAMROL cam follower against moisture, dirt, chips, etc. guarantees longer service life . . . reduces maintenance. This sealed construction retains lubricant and eliminates need for frequent relubrication, so often undesirable in cam action, guide support and track roller applications.

Special seals are built in at stud and flange ends. A black oxide finish on all exposed surfaces offers outside corrosion resistance. The channeled reservoir above the rollers in the outer raceway bore helps store reserve lubricant, sufficient in most cases for lifetime service. Relubrication is possible through convenient oil holes. The new SCF sealed CAMROL cam followers interchange with proven standard CAMROL cam followers. Standard stock with roll diameters up to 4″ are available for both stud and shaft mounting.

For maximum bearing life where contamination is a problem, specify sealed CAMROL cam followers. Ask your McGill representative or our engineering department for recommendations.

Write for Catalog No. 52-A

McGILL®

MULTIROL® GUIDEROL® CAMROL®
Precision Needle Bearings

McGILL MANUFACTURING COMPANY, INC., 301 N. LAFAYETTE ST., VALPARAISO, INDIANA

How SKF Saved in 7 Ways

and at the same time improved its roller bearing cages by using the right

Revere Brass Strip

SKF Industries, Inc., Philadelphia, Pa., like other progressive organizations, is constantly seeking new ways to improve its products and at the same time cut production costs.

With this in mind they recently reviewed the kind of brass which was being used in their spherical roller bearing cages from the standpoints of quality and fabrication. It was then that Revere's Technical Advisory Service studied the problem first-hand and made recommendations to the **SKF** production and engineering departments.

SKF IMPROVED TYPE "C" Spherical Roller Bearing cut away to show how the cage, made of Revere Brass Strip, fits into the bearing. Due to its advanced internal design, this bearing provides greatly increased capacity and service life.

HERE IS "window-type" cage of SKF Spherical Roller Bearing, made in two pieces, one for each row of rollers. Cage is made from rugged Revere Brass Strip at the Shippensburg, Pa., plant of SKF Industries, Inc.

The result was the adoption of specification changes in brass strip as recommended by Revere which gave SKF these 7 money, time and tool-saving advantages:

1. One bore pressing operation has been eliminated. Machining is more easily accomplished. Less machining is required.
2. Tool life has been increased with some speeds increased up to 100% and feeds up to 30%.
3. Rework due to burrs has been greatly reduced. One step less is required in the deburring operation while savings through reduced cycle time for remaining deburring operations are up to 40%.
4. Chips are small now . . . there is no "angel hair" to clutter work area.
5. Life of punch used in notching roller bearing cage has been doubled. Now a run may be completed without making tool adjustments due to sharpening tools.
6. Machining speeds and feeds have been substantially increased over those in machining the former alloy.
7. Die setters report that considerable work has been eliminated in setting up the tools used.

And, all of these money-saving things were accomplished without sacrificing quality—in fact the quality of these roller bearing cages was *improved!*

This is still another eye-opening example of Revere supplying the metal that will do the best job and with the greatest economy . . . be it brass, copper or aluminum or any one of their alloys.

Why not call in Revere's Technical Advisory Service to review your operation? It may mean money saved with an improved product to boot.

REVERE COPPER AND BRASS INCORPORATED

Founded by Paul Revere in 1801

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Mills: Baltimore, Md.; Brooklyn, N.Y.; Chicago, Clinton and Joliet, Ill.; Detroit, Mich.; Los Angeles and Riverside, Calif.; New Bedford, Mass.; Newport, Ark.; Rome, N. Y. Sales Offices in Principal Cities, Distributors Everywhere.

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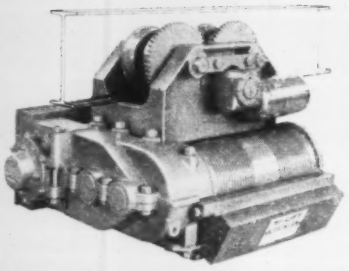
NORTHERN



HEAVY DUTY

HI-LIFT HOISTS

with

TROLLEY DRIVE

Northern Hi-Lift Hoists, in all models from two through 15 tons capacity, with all their heavy duty, rugged features, including the same low headroom, are now available with a new, inexpensive trolley drive designed for moderate speeds, and for single or variable speed control. A worm drive provides smooth, quiet and trouble-free operation. Compact design and arrangement allow maximum approaches with minimum space requirement.

These two-motor hoists are available for A.C. or D.C. current, and are built with standard or fluid coupling drives. Write for further details to:

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Refined Fe Cr "55"
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Vancoram Alloys for Reduction

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Vancoram Alloys for Finishing

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Remember—there has never been an acceptable substitute for quality! Remember, too—Vancoram Alloys *set the standards for quality!* Next time there's a question about alloys, call for the services of our Engineering-Sales and Technical Representatives at your nearest VCA District Office.

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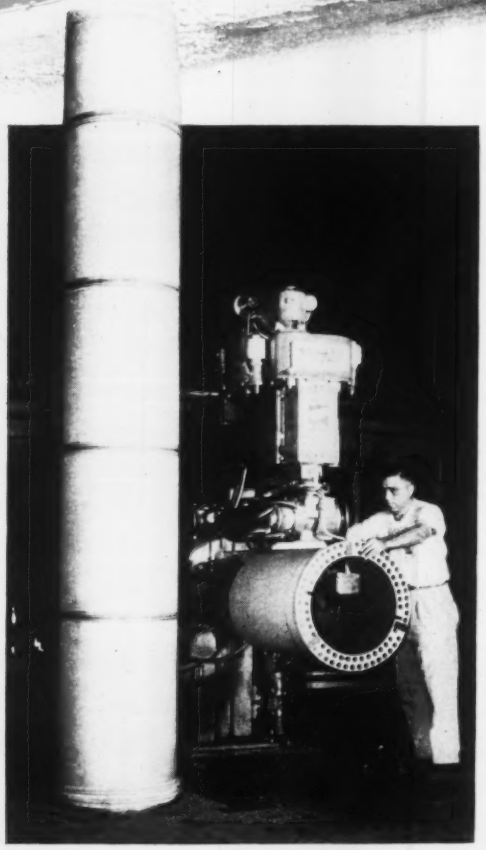
HEAT • WEAR • CORROSION

HAYNES Alloys solve the

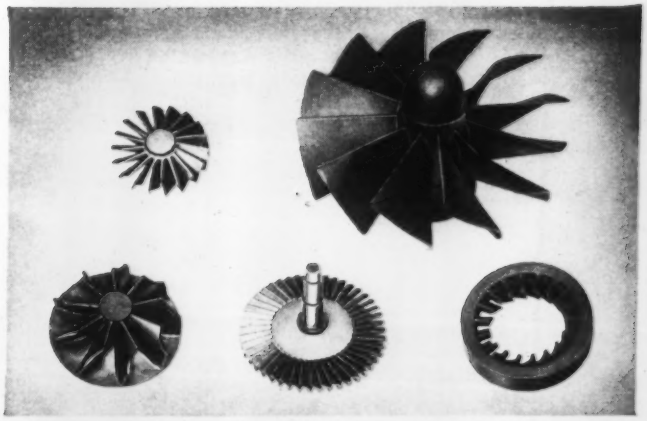


HEAT

2,000 degree jet blast!

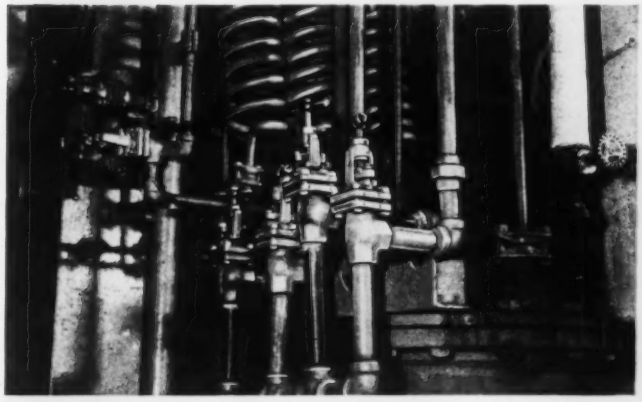
The jet engine tailpipe of the Navy's A4D "Skyhawk" operates at extremely high temperatures. That is just one of the many reasons why this part is made of MULTIMET alloy. This is one of 6 HAYNES wrought alloys that have unusual resistance to high temperatures and oxidation. Because of their exceptional properties, HAYNES alloys are being used extensively in such parts as after-burner components, jet engine tailpipes, turbine blades, and nozzle vanes.

tough problems



PRODUCTION Intricate turbine wheels mass-produced.

HAYNES' investment-casting method offers a selection of alloys developed for economical operation over a wide temperature range. Blades and wheels are produced as one integral part to as-cast tolerances that permit operation with unusually fine clearances at high speeds.



CORROSION Withstands corrosive chlorine 10 years!

Handling highly corrosive liquid chlorine was an expensive maintenance problem—until valves made of HASTELLOY alloy C were installed. This is just one of the many corrosive difficulties met by HAYNES Alloys. They also have excellent resistance to hot mineral acids, strongly oxidizing salts, and powerful gaseous oxidants over a wide range of temperatures and concentrations.

If you have an application that is creating a tough heat, wear, or corrosion-resistance problem, you will find it profitable to check with HAYNES Stellite Company. In practically every industry, you will find HAYNES Alloys doing a better job, lasting longer, reducing maintenance and proving most economical.

Tell us your problem and we will send you descriptive literature on the HAYNES Alloy best suited to solve it. Write HAYNES STELLITE COMPANY, Division of Union Carbide Corporation, General Offices and Works, Kokomo, Indiana.

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ALLOYS
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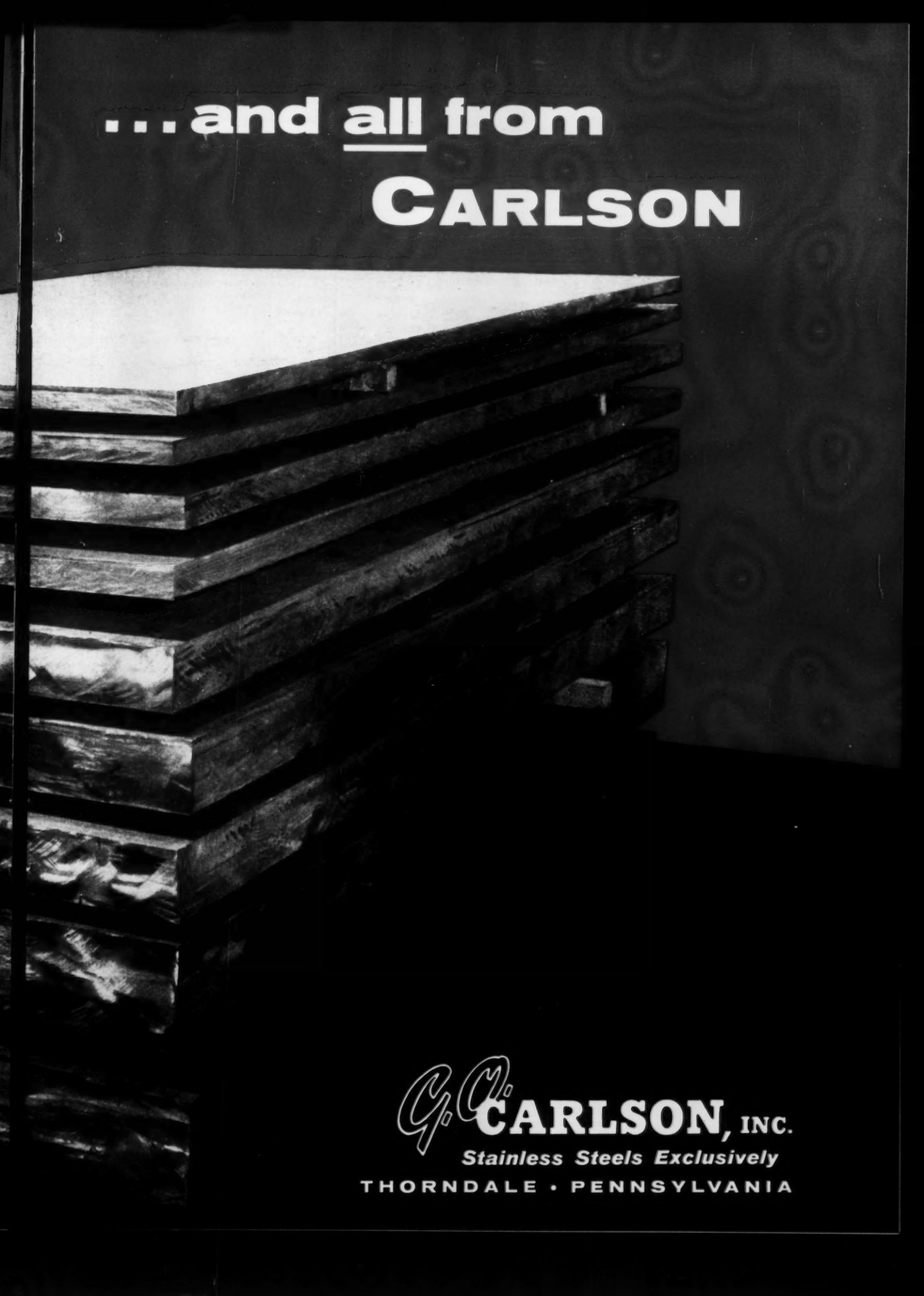
UNION CARBIDE

"Haynes," "Multimet," "Hastelloy" and "Union Carbide" are registered trade-marks of Union Carbide Corporation.

Type 304 stainless plates abrasive cut to size and ultra-sonic tested. These plates total 19 tons and range from 1 to 6 inches thick.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THIS "FRINGE BENEFIT" BENEFITS THE BOSS

No doubt about it! Clean, attractive dress-wash-and-change facilities built around the advantages of Republic Steel Lockers are a decided employee benefit. A low-cost benefit. One that pays off for management in terms of high employee morale and a company reputation as "a good place to work, a good place to stay".

Republic Steel Lockers help employees start their day and end their day with a good feeling about the company. These high quality lockers just plain look better! They resist surface damage and unsightly rust because they're Bonderized, then finished with long-lasting baked enamel. Incidentally, modern locker rooms needn't be drab. Republic offers a choice of lighter, brighter locker colors.

Interiors are spacious, well-designed for convenience and good ventilation. Hooks and hardware are the best obtainable. Positive locking and heavy-duty hinges assure complete protection for personal effects and tools. No need to worry about pilferage.

No better time than now to plan new or expanded dress-wash-and-change facilities around Republic Steel Lockers. Republic's Berger Division has been in the locker business for a long time. Berger knows how to build the locker quality you want, and deliver it at a competitive price. Berger will help plan your locker grouping and handle all installation details.

Superior locker facilities are a "fringe benefit" that benefits the boss. Check your phone book for your Berger representative, or send coupon for facts.

YOU NEED IT, WE'LL MAKE IT. This special storage unit was designed and manufactured by Republic's Berger Division. Here, the customer wanted easy-to-use, easy-to-adjust sliding shelves to accommodate a multiplicity of can sizes. Berger's Special Products Department took over the problem, came up with the solution. Berger is geared to design, fabricate, finish and package all types of multi-run sheet steel products. Through its contract manufacturing facilities and equipment, Berger can take the whole job off your hands. Send coupon for facts.

SAVE SPACE, SIMPLIFY PALLETIZING AND STACKING. The savings of palletized handling now can be applied to bulky, uneven, odd-lot and fragile materials. Republic Pallet Racks make palletizing practical. Tubular steel supports adjust every six inches to handle palletized materials of any height. Two-way entry permits loading and unloading from either side. You select single pallets from any level without restacking. Send coupon for complete description, specifications, and quotations.

REPUBLIC WEDGE-LOCK STEEL SHELVING FOR SPACE-SAVING HIGH STACKING. Wedge-Lock is the world's strongest shelving. None more versatile. Wedge-Lock's great strength allows unusually high stacking. Secret is in the exclusive sway-proof joint that actually becomes tighter as the load increases. Wedge-Lock includes the three essentials of good steel shelving: a post that will not buckle, a reinforced shelf that does not sag, a concealed sway-proof joint. Berger storage engineers will help you design your installation. Send coupon.

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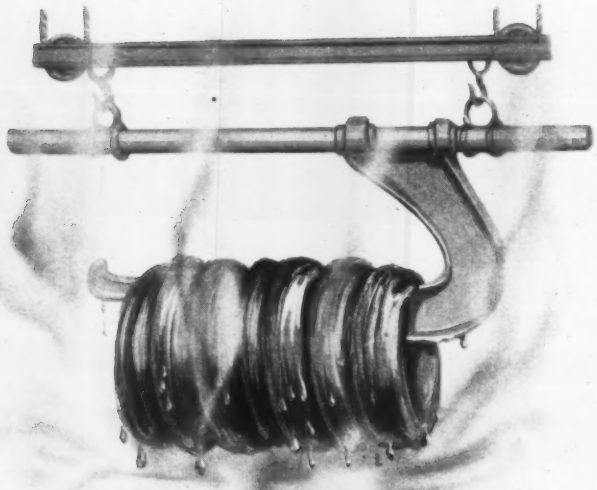


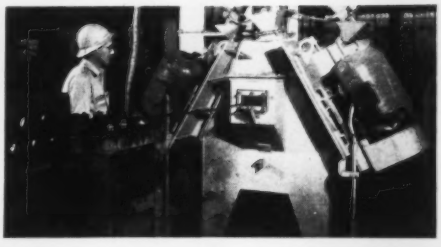
DUNKING IS NOT FOR STEEL ROD

Wheelabrator® abrasive blast descaling automates wire drawing and processing lines

Through application of Wheelabrator blast descaling, it is now possible to clean, coat, draw, and cold head in one continuous operation and secure the following advantages:

* Strand cleaning and coating ahead of cold drawing
* Faster, more uniform cleaning
* Superior finish for coating and die lubrication
* Elimination of multiple handling of hot rolled coils

These cost-cutting Wheelabrator advantages are already being obtained by prominent producers of wire products in descaling various size rod at speeds up to 600 f.p.m. New applications in the wire products field are constantly being developed. It will pay you to investigate the Wheelabrator for your cleaning problems. Write today for complete information.



Send for Bulletin No. 148-D

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CORPORATION

509 South Byrkit Street, Mishawaka, Indiana
Canadian Offices: Scarborough (Toronto) – Montreal

Who Buys Roebling Upholstery Spring Wire After You Do?

The end-user can hardly be expected to know a great deal about Roebling helical spring wire, border and brace wire, zigzag and no-sag wire, wire for automatic machines, lacing wire...

Thus, the qualities of uniformity, temper, tensile strength, size and finish that are yours whenever you use Roebling Spring Wire mean long life, resiliency under constant use (and abuse) where it counts the most...to those who buy Roebling Upholstery Spring Wire after you do.

For further information on the wide range of types, the consistent superiority and availability of these and other Roebling wire products, write Wire and Cold Rolled Steel Products Division, John A. Roebling's Sons Corporation, Trenton 2, New Jersey.

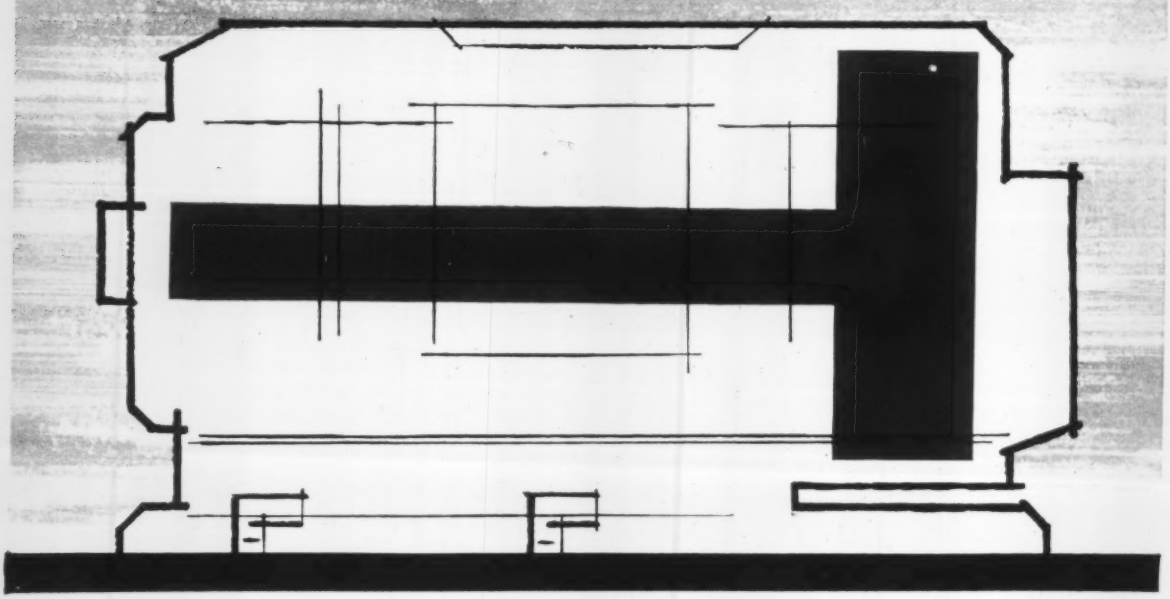
Roebling...Your Product is Better for it

ROEBLING

Branch Offices in Principal Cities

Subsidiary of The Colorado Fuel and Iron Corporation

How billion-proved VALFORGINGS will help an alert pump manufacturer cut part costs 19%



By making a one-piece rotor and drive shaft from a single VALFORGING, a manufacturer of pumps will be able to reduce his cost per pump more than 26 cents a unit.

A Thompson VALFORGING is a hot-extruded steel forging whose head-to-shaft-diameter ratio is at least 1½ . . . a large head on a smaller shaft. Continuous grain flow at the neck provides higher strength at high stress points. Simple head features can also be coin-pressed into VALFORGINGS to eliminate several costly machining operations.

If you now make parts of this type by turning down overlarge rough forgings or expensive bar stock, you are generating high-cost scrap on high-burden machines with high-priced machinists. A VALFORGING comes to you forged to shape in any grade of steel you require.

Let us show you how VALFORGINGS can be made in sizes up to 5" in head diameter, 12" shaft length. Write to the address below.

Valve Division ***Thompson Products, Inc.***

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CALENDAR
OF MEETINGS

June 8-13, Society of Automotive Engineers: Summer meeting, Chalfonte-Haddon Hall, Atlantic City, N. J. Society's address: 485 Lexington Ave., New York 17, N. Y. Secretary: John A. C. Warner.

June 9-10, Malleable Founders' Society: Annual meeting, Homestead, Hot Springs, Va. Society's address: 1800 Union Commerce Bldg., Cleveland 14, Ohio. Executive vice president: Lowell D. Ryan.

June 9-11, American Management Association: Special manufacturing conference, Hotel Carter, Cleveland. Association's address: 1515 Broadway, New York 36, N. Y. President: Lawrence A. Appley.

June 9-12, National Materials Handling Exposition & Conference: Public Auditorium, Cleveland. Information: Clapp & Poliak Inc., 341 Madison Ave., New York 17, N. Y.

June 9-13, International Automation Congress & Exposition: Coliseum, New York. Information: Richard Rimbach Associates Inc., 845 Ridge Ave., Pittsburgh 12, Pa.

June 15-19, American Society of Mechanical Engineers: Semiannual meeting, Statler-Hilton Hotel, Detroit. Society's address: 29 W. 39th St., New York 18, N. Y. Secretary: C. E. Davies.

June 21-24, Alloy Casting Institute: Annual meeting, Homestead, Hot Springs, Va. Institute's address: 286 Old Country Rd., Mineola, N. Y. Executive vice president: E. A. Schoefer.

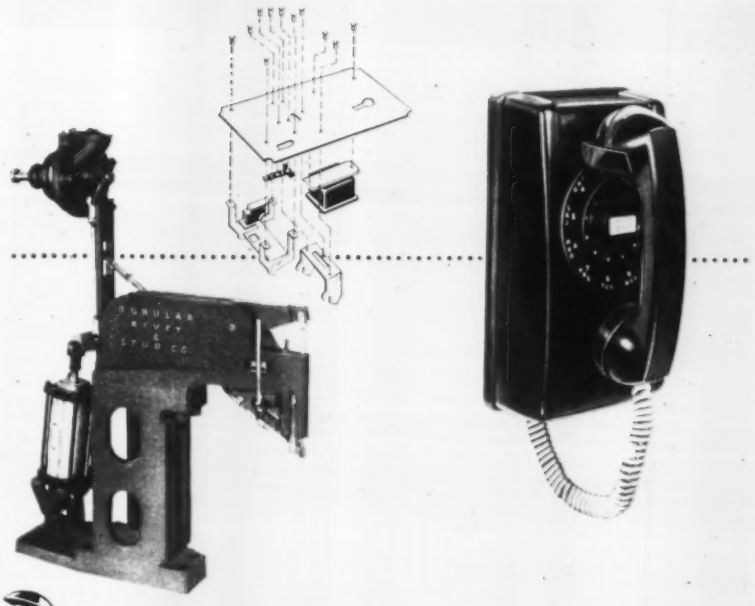
June 22-27, American Society for Testing Materials: Annual meeting and exhibit, Statler-Hilton Hotel, Boston. Society's address: 1916 Race St., Philadelphia 3, Pa. Executive secretary: Robert J. Painter.

June 23-27, American Institute of Electrical Engineers: Summer general meeting, Hotel Statler-Hilton, Buffalo. Institute's address: 33 W. 39th St., New York 18, N. Y. Secretary: N. S. Hibshman.

June 24-26, American Marketing Association: National conference, Harvard Graduate School of Business, Boston. Association's address: 27 E. Monroe St., Chicago 3, Ill. Secretary: Schuyler F. Otteson.

July 14-16, Truck-Trailer Manufacturers Association: Summer meeting, Homestead, Hot Springs, Va. Association's address: 710 Albee Bldg., Washington 5, D. C. Managing director: John B. Hulse.

SPEEDS FASTENING BY 60%



Tubular's RIVETS AND RIVETERS HELP *Western Electric**

Maximum Efficiency Requires Flexibility

A substantial reduction in the cost of assembling components of the wall-phone base-plate resulted when engineers from Western Electric's Indianapolis Works and **Tubular** solved a fastening problem — they developed a Multi-Head Riveter assembly consisting of 11 automatic, air-operated machines. A bank of 5 riveters was joined to a 6-machine bank by a bridge with a rolling fixture. This method replaced the preliminary fastening plan which was based on 40 operations, 2 machines and 2 operators. The new Multi-Head assembly reduced estimated fastening labor costs about 35%. When production requirements increased tremendously, an additional nominal investment modified the bridge and added a second rolling fixture. Two operators were then easily able to boost the production rate an additional 60%.

*WESTERN ELECTRIC

Western Electric, manufacturing and supply unit for the Bell System, produces telephones, wire and cable, switching systems; and in addition, makes important contributions to defense projects such as DEW Line and Nike Guided Missile Systems.

TUBULAR of Quincy

If assembly speed is an important factor in your own cost picture, take the time right now to learn how **Tubular's** Rivets and Automatic Riveting Machines may help you. **Tubular's** Riveters can feed and set one, or as many as 12 different rivets on different planes at one time. Call our nearest office or send us your blueprint, at no obligation, for complete information and technical help.

Tubular Rivet & STUD COMPANY
WOLLASTON (QUINCY) 70, MASS.

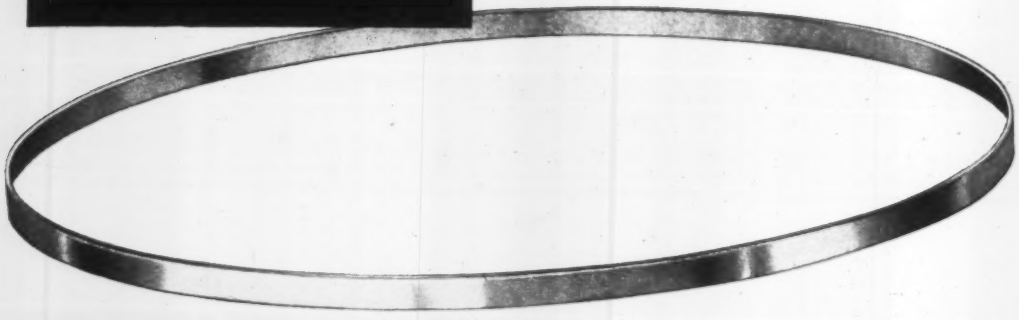
FASTEN AUTOMATICALLY BETTER and FASTER with TUBULAR'S RIVETS and MACHINES

MIDWEST OFFICE & WAREHOUSE — CHICAGO

BRANCH OFFICES: ATLANTA • BUFFALO • CHARLOTTE • DALLAS • DETROIT INDIANAPOLIS • LOS ANGELES • NEW YORK CITY • PHILADELPHIA • ST. LOUIS SAN FRANCISCO • SEATTLE

See your local classified directory for phone numbers

Precision Rings with little or no machining



Today you can purchase precision flash butt-welded rings that require little or no machining to meet your specifications. Made from bar stock of finished gauge, they can be produced to meet the same tolerances as conventionally machined rings. Cost of production and materials of some rings has been reduced as much as 60%. Sizes and materials at present are limited to those bar stocks which can be furnished to precise finished dimensions. However, persistent efforts of American Welding engineers and the producers of finished bars give promise of a widening range of sizes and metals that can be manufactured by precision forming and welding.

This is another example of why you should call American Welding first — if the problem is circular and of metal.

New Products Catalog

Write today for 20-page catalog of circular products which American Welding can form, weld and machine for you.

AMERICAN WELDING

THE AMERICAN WELDING & MANUFACTURING CO.
110 DIETZ ROAD • WARREN, OHIO

Jobless Pay Rolls Drop

The number of workers receiving unemployment compensation is dropping sharply. The week ended May 10 showed the biggest decline in nearly two years. The total dropped by 93,308 to 3,101,516, says the Labor Department. In the week ended May 17, new claims for jobless pay fell to 359,236, down 49,410 from the preceding week. That's the first time since December that initial claimants numbered less than 400,000.

The Vacation Story

Despite the recession, the trend toward longer vacations and shorter eligibility requirements continues. The standard now, according to a survey by Associated Industries of Cleveland, is five days' vacation after one year's service; ten days after five years; 15 days after 15 years. Most Cleveland manufacturers compute vacation pay on the basis of the straight time hourly rate of employees, but a substantial minority bases it on average straight time earnings. Plant-wide vacations are overwhelmingly favored this year The peak of the vacation period will come in the first two weeks of July.

Leasing Gains

Leasing of capital equipment in the first four months of 1958 gained 14 per cent over the same 1957 months, says United States Leasing Corp. The largest users of leased industrial equipment are makers of pulp, paper, and allied products; electrical equipment and machinery; chemicals and drugs; rubber products; fabricated metal products; petroleum refining; food products; lumber and wood products; aircraft and parts; and printing and publishing. The major kinds of equipment leased: Machine tools and metal forming devices.

Mill Supply Volume Slips

New orders for production tools, equipment, and supplies placed by industrial distributors with their manufacturing sources continued to drop in April, says the American Supply & Machinery Manufacturers' Association. Its seasonally adjusted index was 148 in April and 149 in March (July, 1948 = 100). Currently, the dollar volume of purchases placed by distributors with their suppliers is the lowest since November, 1954. But the drop in April was only 1 point on the index, compared with average dips of 8 points in each of the last six months, delegates learned at the Triple Industrial Supply Convention, sponsored by ASMMA, National Industrial Distributors' Association, and Southern Industrial Distributors Association.

Recession: Worst Is Past

The worst of the recession is past, believes Martin Gainsbrugh, chief economist for the National Industrial Conference Board, who spoke at the Triple Industrial Supply Convention. Favorable signs: 1. Personal income is firm-

ing. 2. The new order situation is improving for industry. 3. Construction awards are rising. But the recession is not yet over. The decline in capital goods spending could last well into 1959.

Woes in Lead, Zinc

Don't look for an early decision on the lead-zinc tariff. President Eisenhower will probably sit on the Tariff Commission's recommendations for the 60 days allowed by law to give Congress a chance to pass the Minerals Stabilization Bill (See Page 128). When the 60 days expire in late June, watch for Ike to send the recommendations back to the commission for "further study." Government stockpiling of zinc ended last month. Last week's buying of lead is the final one for the stockpile.

Electronic Volume Rises

Electronic manufacturers will do a $7.5 billion volume in the fiscal year to end June 30, compared with $5.7 billion in the last fiscal year. Other statistics revealed to delegates at Electronic Industries Association's meeting: Television set production slipped to 6.1 million units from 6.7 million last year. But that was offset by an output of 10.4 million radios and phonographs, compared with 8.9 million last year.

Re-entry Solution Revealed

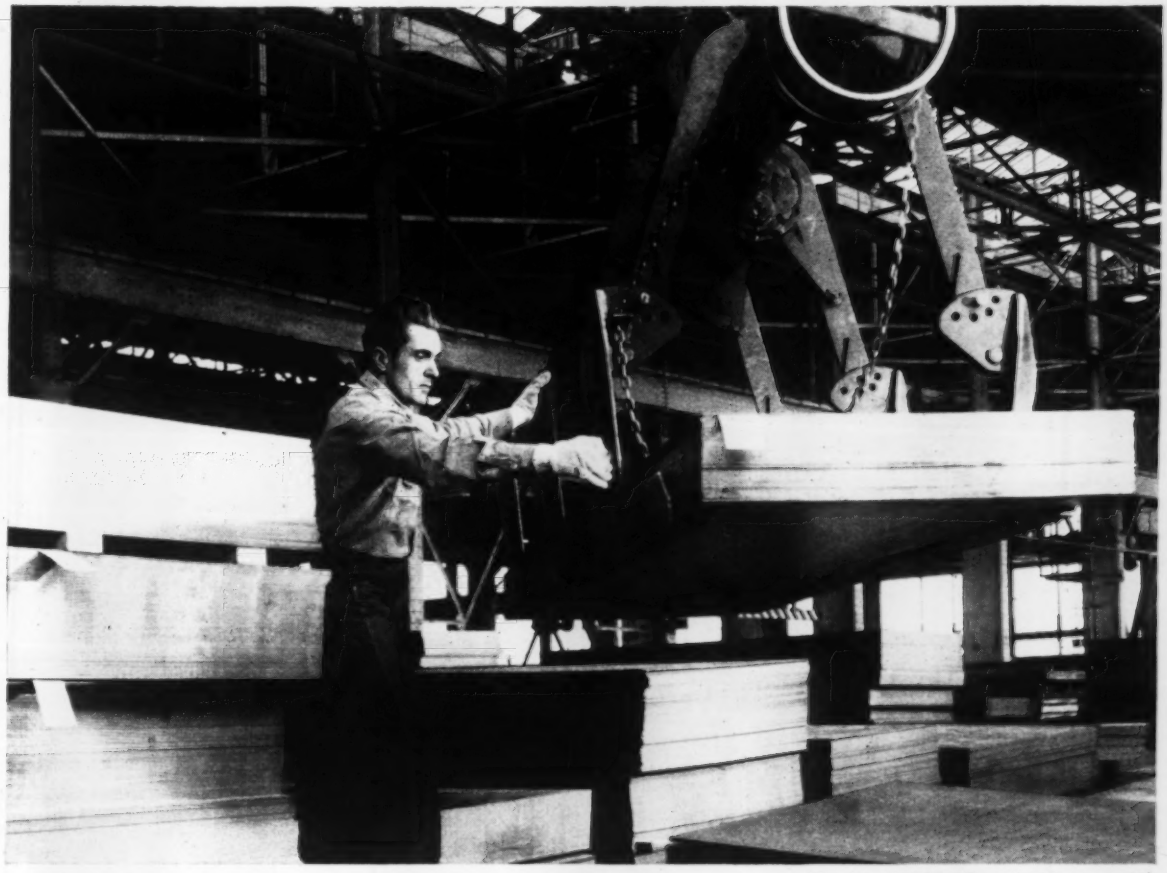
Molten "nonmetallic matter and gases" were injected into the layer surrounding the nose cone of the Jupiter IRBM launched May 18, which demonstrated a solution to the re-entry problem, reports William Marazek, director of the Army Ballistic Missile Agency's Structures & Mechanics Laboratory, Huntsville, Ala. He notes that "almost all major missile projects now use this technique," along with the blunt shaped nose cone, which is designed to lower friction. He reports the Jupiter nose cone could have withstood "heating rates almost comparable to those of an ICBM." Inside the nose cone, he notes, "comfortable temperatures were recorded."

Is Depreciation Reform Dead for '58?

Look for House Democratic leaders meekly to follow the administration and kill corporate and excise tax reform measures which are backed by many senators and representatives (STEEL, May 26, p. 62). You can expect the House to go along with its Democratic leadership, but the Senate is another question. Extension of tax rates should be voted the week of June 9 by the House, in time to get it before the Senate for debate (and possible amendments) and passed by the June 30 deadline. Ways & Means Chairman Wilbur Mills (D., Ark.) told STEEL he "would doubt" if the House votes depreciation help "except as related to small business."

Straws in the Wind

Late next year U. S. Steel Corp. will market aluminum-coated steel sheets . . . Aluminum may some day be smelted with atomic power from ore deposits north of Duluth, says Reynolds Metals Co. . . . Ipsen Industries Inc., Rockford, Ill., industrial furnacemaker, has moved its Ceramic Div. into a new plant in Pecatonica, Ill. . . . U. S. Steel Corp.'s National Tube Div. will increase operations to a seven-day basis at its Lorain, Ohio, steelworks and blast furnaces June 8.



Flat sheets in 577 different lengths—up to 16'.

Now... reduce sheet-forming costs

with Ryerson quality-controlled steel

Accurate slitting on widths up to 48".

Whether you use hot or cold rolled sheet or strip, you can now make sure of the utmost in formability and weldability—by ordering to .10 maximum carbon content (SAE 1008) from Ryerson's unsurpassed stocks.

This means you can minimize, or even eliminate, the problems of variation in forming and welding quality—caused by the average wider range of carbon content.

You'll also find Ryerson prepared to give you fast, accurate service on your special requirements: strip and sketch cutting, blank shearing, edging, coil slitting, etc.

A Ryerson sheet and strip specialist is as near as your telephone—qualified by experience to recommend the stock exactly suited to your requirements, at the lowest cost. Put Ryerson steel experience and unequaled facilities on your cost-cutting team today.

RYERSON CERTIFIED QUALITY

RYERSON STEEL®

Member of the INLAND® Steel Family

Principal Products: Carbon, alloy and stainless steel—tubing, bars, structurals, plates, sheets, tubing—aluminum, industrial plastics, metalworking machinery, etc.

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Using ***CR Sheet Steel*** *in Strip Sizes for certain Stamping or Roll-forming Jobs?*

The PROOF of DSC STEEL is in its PERFORMANCE on Your Job

Here's a NO-RISK, YOU-BE-THE-JUDGE, *JOB-TEST* PLAN

to help you prove whether DSC *AccuRolled** STRIP *can cut unit production costs for you*

CR SHEET STEEL is a pet product of ours. For one thing, it accounts for a large part of our Portsmouth Division's output. But . . . for certain stamping or roll-forming work now using sheet steel in strip sizes . . . DSC *AccuRolled* STRIP may be the more economical choice.

WHY SO? Because the money seemingly saved *per pound* (per your purchase order) may be lost *per unit of end product* (per your final cost sheet).

THIS REASONING IS SUPPORTED by strip's inherent working properties . . . *level* gauge and *even* temper; also uniform satin or bright finish when needed. On jobs where strip belongs, it usually outperforms sheet by improving output per man hour; by increasing yield of acceptable units; by improving assembly time because strip-made components fit together more surely; by improving the functional and/or appearance values of the product.

THE LURE OF LOWER PRICE is potent. A difference of even a fraction of a cent *per pound* sometimes gets in the way of a potential saving in unit costs. The one offers the appeal of immediate benefit. The advantages of the other seem more remote.

HERE'S A PLAN that helps you look beyond the purchase price. Let's say that one of your sheet-using jobs could stand unit cost improvement. We'll help you study the job's economic and mechanical requirements. On an even chance that DSC STRIP can cut your overall production costs . . . we'll roll and supply enough strip for a conclusive test under standard production conditions.

YOU'LL ENJOY RECURRING GAINS if DSC STRIP performs profitably. What happens if the test leaves you no better off than before? That also is provided for in the

DSC NO-RISK, YOU-BE-THE-JUDGE, JOB-TEST PLAN

For a person-to-person explanation of how the Plan works in your interest . . . please write our G.S.O. or call your nearest DSC Customer "Rep" office. We invite you to take us up on the understanding that YOUR DECISION WILL BE FINAL and THE RISK OURS.

Customer Satisfaction Is Our Business

*Trade-mark

—for delivery on the double-quick

DSC *AccuRolled* STRIP

fresh rolled to your order
special rolled for your job

LOW CARBON: All Tempers, Gauge up to 3/16", in Controlled Satin or DEEP ROLLED *RBF* Finish.
HIGH CARBON: Hard Untempered or Soft Annealed
Call your nearest DSC Customer "Rep". . .Today?

35TH ANNIVERSARY YEAR

DETROIT STEEL CORPORATION

GENERAL SALES OFFICE, DETROIT 9, MICHIGAN

CUSTOMER "REP" OFFICES:

Charlotte, N. C., Chicago, Cincinnati, Cleveland, Columbus, Ohio., Dayton, Ohio., Detroit, Grand Rapids, Mich., Hamden (New Haven), Conn., Indianapolis, Jackson, Mich., Louisville, Ky., Milwaukee, Wis., New York, St. Louis, Toledo, Worcester, Mass., Winneconne, Wis.

DSC PRODUCTS: Coke . . . Coal Chemicals . . . Pig Iron . . . Basic Open Hearth Steel Ingots, Blooms, Slabs, Billets, Rods . . . HR and CR Sheet and Strip . . . Flat CR Spring Steel . . . Manufacturers' and H.C. Specialty Wire . . . Welded Wire Fabric

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Modernization:

We Need a Tax Break

Can the U. S. maintain its industrial pre-eminence under its archaic depreciation regulations?

Can we hope to compete with Russia in the race for industrial supremacy if we are handicapped by Model T laws regulating the modernization of plant and equipment?

Can we meet foreign competition in world, even domestic, markets when producers of other nations are aided by tremendous advantages in labor rates and more favorable depreciation allowances?

Those were some of the questions tossed into America's lap by D. S. Holbrook, president of Canada's Algoma Steel Corp., at the fiftieth general meeting of the American Iron & Steel Institute.

Mr. Holbrook frankly thinks the U. S. is placing itself under severe handicaps by holding onto its outdated system. He speaks as the representative of a country that saw the light and modernized its depreciation regulations ten years ago.

Here are some contrasts between the U. S. and Canada:

In 1957, the normal depreciation taken for tax purposes by the Canadian steel industry amounted to $10 per ingot ton of capacity.

In the U. S., producers were permitted only $3.50 per ton of capacity.

Over a 25-year life of steelmaking facilities, U. S. producers will recover less than $90 a ton of annual ingot capacity. It costs $300 to $400 a ton to put in new capacity today.

Canadian producers, under their declining balance system of depreciation, can recover two-thirds of the cost of facilities in the first five years.

Canada has doubled its steelmaking capacity in the last ten years. But industry is not getting a free tax ride. That nation's enlightened depreciation policies have resulted in a constantly expanding tax base brought about by a growing steel producing industry and healthy consuming industries.

In Canada today, the recession is something that is happening to the U. S.

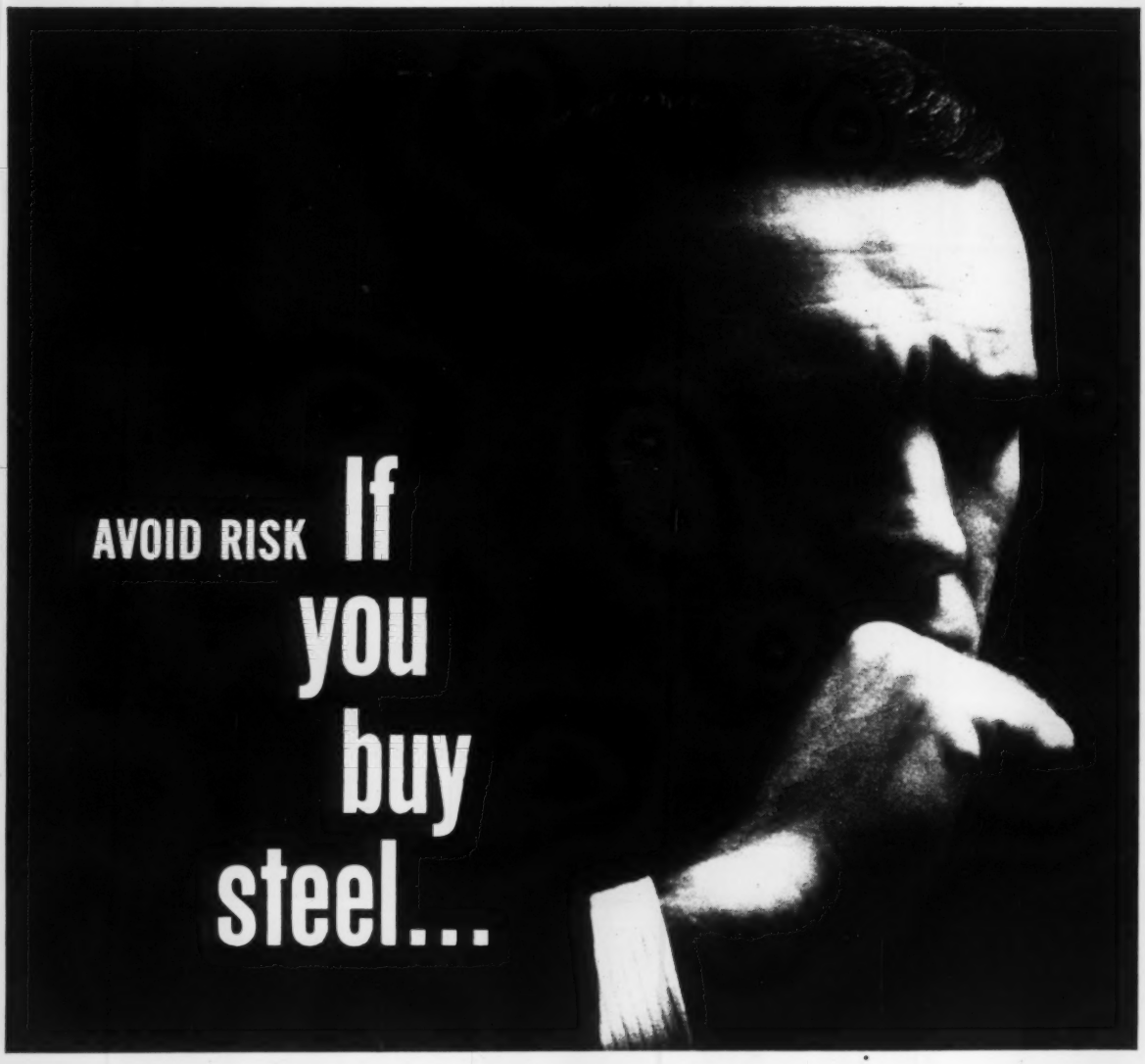
Its experience substantiates the call sounded in these pages the last several weeks for bold action on depreciation:

- Allow equipment purchases in 1958 and the first half of 1959 to be amortized for tax purposes in five years.
- Start now to plan permanent and sensible depreciation reform to be enacted at the next session of Congress.

Again, we propose that program as the quickest, surest way to stem the recession, check inflation, and enable American industry to maintain its pre-eminence.

Walter J. Campbell

EDITOR



USE OUR CAPITAL to cut your inventory costs

You save money when you use the steel inventory of your Steel Service Center. Cutting down your steel stocks frees your capital for more profitable use . . . ties up less working capital. That's good business.

You can save space, and the cost of that space by using our inventories as your own. You seldom suffer obsolescence losses. You avoid inventory problems created by too-ambitious forecasts.

We deliver your steel when you want it, cut to exact size, and ready for your use. Whatever your steel need, there's a nearby Steel Service Center set up to serve you quickly from stock.

If you're putting steel in inventory because you think it's a bargain, compare *all* of your *costs of possession* with the cost and *freedom-from-risk* of buying steel from your Steel Service Center.

Or, to be more precise, get the booklet *What's Your Real Cost of Possession for Steel* from your convenient Steel Service Center. American Steel Warehouse Association, Inc., 540 Terminal Tower, Cleveland 13, Ohio.

COST OF POSSESSION FOR STEEL IN YOUR INVENTORY

Per ton delivered	
Cost of capital:	
Inventory	
Space	
Equipment	
Cost of operation:	
Space	
Materials handling	
Cutting & burning	
Scrap & wastage	
Obsolescence	
Insurance	
Taxes	
TOTAL	

COST OF FREEDOM-FROM-RISK STEEL FROM YOUR STEEL SERVICE CENTER

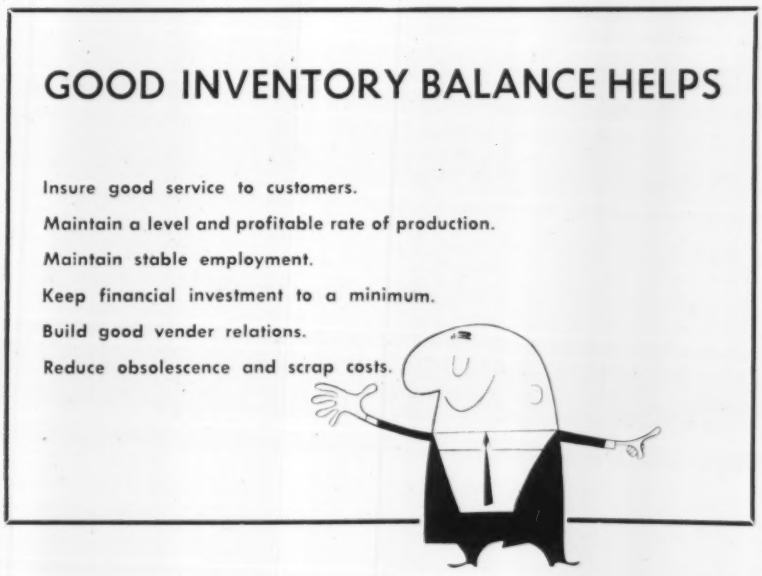
Per ton, cut-to-size, and delivered

TOTAL

AMERICAN STEEL WAREHOUSE ASS'N

The American Steel Warehouse

...YOUR STEEL SERVICE CENTER


GOOD INVENTORY BALANCE HELPS
Insure good service to customers.
Maintain a level and profitable rate of production.
Maintain stable employment.
Keep financial investment to a minimum.
Build good vender relations.
Reduce obsolescence and scrap costs.

Are Your Inventories Right?

If properly controlled, they can add impetus to rising business trends as well as cushion a recession's impact. Appraisal can pinpoint holes in company programs

ABC CO. had no organized system for maintaining inventory balance and was caught unprepared by the recession. As a result, it had to contend with tied up working capital, high obsolescence rates, fluctuating production rates, and the wrath of venders when orders were canceled.

ABC's management cursed the recession and passed the buck on inventory problems. Inventories were slashed indiscriminately. When business turns upward (STEEL's Industrial Production Index—Page 53—indicates it is doing that now) too-thin inventories will cost ABC in terms of lost sales, loss of customer good will by delaying deliveries, high cost emergency buying, and overtime scheduling of production.

Why It Happens—Objective appraisal could have pinpointed these faults in the inventory control program of ABC Co. (and many nonmythical firms):

1. Lack of a company policy outlining inventory objectives.
2. Foggy (if any) delineation of management responsibility for achieving objectives.
3. Poor co-ordination of sales, production, purchasing, and financial functions.
4. Inaccurate sales forecasting.

Setting Objectives — The main methods of expressing inventories are: 1. Minimum-maximum quantities. 2. Number of days' supply. 3. Rate or turnover. 4. Dollar budget levels.

These factors go into the inventory formula determination: Sales history, customer order practices, obsolescence, manufacturing cycle, economic production lots, material and component leadtime, storage space, unit costs of materials and end product.

Objectives should be dictated by each firm's situation. The important thing is to know what they are.

Who's Responsible?—It can be logically argued that responsibility for inventory balance belongs to sales, finance, production, purchasing, or even to a separate function such as manager of materials and schedules.

Rheem Mfg. Co.'s philosophy: Inventory control should be a function of purchasing departments. George J. Papas, director of purchasing, reasons: Purchasing agents are in daily contact with the business world through venders and are able to develop a "feel" for general market conditions as well as those affecting their buying.

A good purchasing agent, continues Mr. Papas, is expert in developing sources of materials for price, quality, and delivery considerations. He must also recognize situations calling for special action—pricing trends, possible vender strikes, and activities affecting material prices or availability.

In Rheem plants, the purchasing agent is chairman of the inventory management committee. Committeemen include the plant manager, sales manager, plant accountant, production manager, and the material control supervisor. In monthly meetings, sales, sales forecasts, production scheduling, and inventories are reviewed. If sales are not hitting targets, adjustments are made in future schedules.

Another Way—Norge Div., Borg-Warner Corp., gets similar control with inventory responsibility delegated to W. F. Bach, production planning manager. He meets regularly, sometimes weekly, with the president, vice presidents of sales and manufacturing, and marketing research director.

Sales and sales forecasts for products (by model) are analyzed. Every 30 days a new manufacturing schedule is drawn up covering a firm schedule for the current month, a semifirm schedule for the second 30 days, and a tentative schedule for the third month.

When emergency schedule changes are necessary (sales upturns or downturns could be the cause), phone calls to plants start

How 'Balanced' Are Your Inventories?

	YES	NO
1. Do you have specific inventory objectives and performance standards established in company policy?	____	____
2. Is the management function responsible for meeting inventory objectives clearly defined?	____	____
3. Do you have proper co-ordination among marketing, finance, and production—each recognizing the importance of balanced inventories?	____	____
4. Is your sales forecasting generally within 5 to 10 per cent of actual sales? Such accuracy is necessary to maintain stable production scheduling and keep purchase order changing to a minimum.	____	____
5. Does your inventory formula permit you to cope with rapid upturns in demand so that you do not develop costly short term material shortages?	____	____
6. Are changes in sales patterns quickly reflected in production and purchasing programs? Are you able to notify all venders in less than a week of release changes?	____	____
7. Are your buyers doing a good job in developing good vender sources—not only for quality and price but for reliability to meet delivery schedules and occasionally handle an emergency order?	____	____
8. Are your buyers "in tune" with economic conditions? Do they quickly recognize situations, such as price changes and possible vender strikes, and recommend specific buying action?	____	____
9. Do you know your inventory carrying costs? If they average much over 21 per cent of inventory value, a reappraisal of your inventory system is recommended.	____	____

the corrective mechanism working.

To initiate emergency action from a purchasing agent upward takes a phone call in the reverse direction. Example: A buyer expects a vender strike and wants to provide a cushion just in case. He makes the recommendation to the plant manager who calls Mr. Bach. He'll rule on the suggestion, and the vender can be notified, usually within an hour.

As incentive to keep buyers on their toes "we have established standards," explains Mr. Bach. "Monthly purchase reports come to me. Each buyer is expected to meet or improve standards. If he's over, he must justify it." Result: Officials report it's not unusual to be within ten units of projected inventory of finished models at the month's end.

Computers Can Help—Corporate giants like International Harvester Co. have turned to computers to cut inventory costs and increase control. V. C. Wilson, auditor of manufacturing, Motor Truck Div., says a computer helped his division reduce the time needed to notify venders of schedule changes from a maximum of six weeks to four days. When dealing with thousands of venders, substantial inventories are involved.

Computers have a big advantage (speed) in inventory control, says T. Wieczoreck of John A. Patton Management Engineers Inc. But too much reliance on computers or strict adherence to formulas can mean wasted inventory dollars.

Understanding and Cost — One key to efficient inventory balance is assurance that each management function involved understands the entire program. They'll co-operate instead of argue if each knows what the other is trying to do and why.

It's also important to know how much inventories are costing your company. Most executives peg costs at 15 to 21 per cent of total inventory value. D. A. Lehman, manager of materials and schedules for Fairbanks, Morse & Co.'s Beloit, Wis., plant estimates his costs at 18 per cent. Factors included: Obsolescence and depreciation, 8 per cent; cost of money invested, 5 per cent; handling and storage, 4 per cent; taxes and insurance, 1 per cent.

In establishing an inventory formula, be sure to include studies on economic lot runs for products, stresses Paul Nielsen, manager of production control at Stewart-Warner Corp.'s Alemite & Instrument Div. Balance between inventory costs and economic lot production costs must be considered. S-W lowered its inventory costs 22 per cent in the last two years by tightening controls and better co-ordinating of sales and production.

Don't Overlook Forecasts—The importance of accurate sales forecasting as an aid to purchasing and inventory balance is emphasized by David S. Gibson, vice president of purchasing for Worthington Corp.

At the American Management Association's Marketing Conference in Chicago, Mr. Gibson said good forecasting: 1. Helps reduce overordering and underordering. 2. Permits grouping purchases for better pricing through quantity buying. 3. Helps determine short term cash needs by predicting how much capital will be tied up in inventory. 4. Gives purchasing agents more time to line up better supply sources and negotiate better prices. 5. Permits more time to notify venders of schedule changes.

• *An extra copy of this article is available until supply is exhausted. Write Editorial Service,* STEEL, *Penton Bldg., Cleveland 13, Ohio.*

Construction Worker Pay Climbs

(Average hourly union wage scales)

	Rate as of Apr. 1, 1958	Percentage Increase from Jan. 2, 1958	Percentage Increase from Apr. 1, 1957
Bricklayers	$3.79	0.2	2.6
Carpenters	3.35	0.4	5.1
Electricians	3.57	1.1	4.6
Painters	3.22	0.5	5.3
Plasterers	3.67	0.2	3.8
Plumbers	3.61	0.3	5.4
Laborers	2.40	0.6	6.3

Source: Bureau of Labor Statistics.

Building Costs To Climb

PRESENT building costs are lower than they were six months ago, or what they will be six months hence.

That's what major contractors told STEEL last week. Said one: "Construction prices are on a high plateau between two peaks. They reached one peak about six months ago, have dropped noticeably, but will rise to another peak after contractors get hit by wage and material hikes this summer."

Echoes a Commerce Department expert on construction statistics: "High - spirited competition has brought about bids which appear fantastically low." He reports widespread price softening through discounts and term variations.

Reasons for the lower prices, say contractors:

1. **Less Activity**—Contractors say they are busy now, but their backlogs of contracts are low. They're whittling their prices to secure work for later in the year.

2. **Keen Competition**—"Builders aren't sticking to their specialties," reports an Ohio contractor. "And little outfits are bidding on big jobs," he adds: "That causes pencil sharpening all the way around. Prices—and profit margins—have been trimmed."

3. **Improved Productivity**—"Labor performance is most gratifying in the building industry today," declares an eastern contractor. "The fact that a lot of craftsmen are out of work might have something to do with it," he adds.

4. **Cheaper Materials**—The Bureau of Public Roads reports reinforcing steel costs are down almost 3 per cent, structural steel costs, more than 4 per cent. The bureau says the average bid price for federal aid highway construction dropped 2 per cent in the first quarter of 1958 from the last period of '57. The Bureau of Labor Statistics' price index of building materials dropped to 129.3 in April, 1958, from 130.7 in April, 1957.

Builders report that some new aluminum, plastic, and ceramic products help reduce plant building costs.

Cement prices have stayed high, so that type construction hasn't dropped as much, say builders. But some bargains are available as a result of fierce competitive bidding.

Outlook — Builders say they'll jump their prices this summer to make up for wage hikes and the expected steel price increase. Most say they'll pass along the greatest part, if not all, of the added costs. "Our profit margins have been squeezed too much now," asserts a Cleveland firm's vice president: "Featherbedding is one of our worst curses."

Some builders look for a pickup in construction activity before year-end. Associated General Contractors, Washington, predicts a 4 per cent increase in dollar volume of construction in 1958 (vs. 1957). But it says the entire increase will be inflationary.

Long Range—Look for construction prices to climb 10 to 15 per cent above current levels when business picks up. That's the prediction of a large midwestern contractor, who says many builders would try to get that kind of a hike now if competition were less severe.

Equipment Prices Steady

Look for prices of construction equipment to stay near present levels for the rest of 1958. A smattering of increases may be put through, but only a bold manufacturer would take such action unless there's a sales upturn to ease competitive pressures. It's more probable that any price fluctuations will be downward.

Official charges haven't varied much since last fall (the BLS price index stood at 165.4 in April, vs. 157.5 in April, 1957), but there has been a lot of price shading, especially by dealers. They're giving lower prices, more liberal trade-in allowances, and lower carrying charges. Expect the concessions to continue—but at a slower pace.

Woes—Manufacturers fear they'll have to eat labor and material increases this summer. Competition is fierce because business is down (as much as 40 per cent for some companies) and because overcapacity has resulted in large stocks at plants and dealer showrooms.

So prices won't rise much until demand improves substantially—and there's no indication of that happening early. But sales are being made by aggressive companies. Example: In April, Frank G. Hough Co., Libertyville, Ill., ran a 10-mile motorcade of 100 crawler tractor-

Frank G. Hough Co.

Construction Equipment Prices: What To Expect Till Yearend

DRAGLINES—Stabilization of list prices. An unlikely possibility: Rise of 2 to 3 per cent in late summer or early fall.

POWER SHOVELS—A slight increase in late summer if steel and labor costs go up as expected.

BULLDOZERS—Stabilization through 1958.

PAVING EQUIPMENT—Steady manufacturers' list prices. More shading by dealers. A hike only if business improves substantially.

PORTABLE AIR COMPRESSORS—Probably no change this year. Some continued price shading by dealers.

CONSTRUCTION PUMPS—Stabilization of list prices. Some shading among dealers. Outside possibility: A hike of 2 to 5 per cent in the late fall if business picks up.

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shovels to a distributor meeting in Salt Lake City, Utah. All the equipment ($1.5 million worth) was sold. Company officials estimate it gave them a 10 per cent sales increase. And they count on it to bring another 10 per cent advance before yearend.

More Roads—The federal highway program will pick up steam this year, but the construction equipment industry probably won't be much affected till '59 or '60. The new highway bill gives the states $1 billion more to obligate for construction in 1958 than originally planned. (That means about $175 million more equipment sales.) This year, $6.6 billion will be allotted ($5.3 billion for construction and $1.3 billion for rights of way), says Maj. Gen. Louis W. Prentiss, executive vice president, American Road Builders' Association. That compares with a $5.6 billion total in '57 and an anticipated $7.5 billion in 1959, General Prentiss says.

A sales manager for a major equipment builder observes: "Property acquisition, engineering, and other bottlenecks are holding up contracting awards in some states. In many cases, relatively few miles of road sop up a tremendous amount of funds."

More Homes—Most makers don't look for much help from the new home market. Easier purchases under VA and FHA programs plus looser mortgage money should boost construction about 100,000 units this year (from around 1 million to 1.1 million), believes Albert M. Cole, federal housing administrator. The consensus is that there's enough equipment to take care of the small upswing.

Here's how the price outlook shapes up for six categories:

Draglines—Weak demand makes a price advance unlikely this year. A few makers say a strong sales pickup could trigger a slight rise (2 to 3 per cent) in late summer or early fall. Otherwise, manufacturers will absorb added labor and material costs.

Power Shovels — Manufacturers agree: If steel and labor costs rise, so will their prices. Reason: Profits are too low to absorb more costs, say makers. One firm says it may even pass on component price increases it has suffered in the past year to get back to "normal profit margins."

Bulldozers—Higher steel and labor costs plus a possible sales pickup late in the year point toward higher prices. But customer resistance acts as a brake. Prediction: Expect price stability at least through most of '58, possibly into '59.

Paving Equipment—Demand is lower than most makers anticipated, so competition to move surplus inventory is intense. It's unlikely manufacturers' published price lists will be changed much this year. Dealers may offer more concessions, but their prices will probably strengthen by yearend. Material cost hikes could spur a mild manufacturer increase late in the year—only if business improves.

Portable Air Compressors — "Users of portable air compressors won't pay more than is presently being asked," concede most companies. Intense competition and low sales also are restraining influences. So don't expect a price increase this year. Price shading by dealers will continue but gradually subside as the year wears on.

Construction Pumps—The business slump has not hit pump builders as hard as it has many other groups. The highway program should bring in more business this year, considerably more in '59 and '60.

List prices aren't likely to drop, but there may be more trimming by dealers. If sales gain, look for makers to put through a hike this fall (probably 2 to 5 per cent).

• *An extra copy of this article, the fourth in a five-part series on metalworking's pricing prospects, is available until the supply is exhausted. Write Editorial Service, STEEL, Penton Bldg., Cleveland 13, Ohio. On May 12, the editors dealt with steel prices; on May 19 with components; on May 26 with production equipment. Next week, they will study the situation in consumer durables.*

Mannesmann A. G.'s exhibit at German Industries Fair features seamless and welded pipe and tubing. It is one of the largest producers of steel in Germany

German Firm Is Prosperous

GERMAN manufacturers are aiming for a larger share of the world market, and Demag A. G., Duisburg, is no exception.

Because of aggressive marketing, Demag is not experiencing a recession. Its turnover (equipment produced and billed) set a record of 740 million marks (about $177 million) last year.

Dr. Hans Reuter, Demag president, told STEEL turnover this year should match 1957's. The current order backlog is 900 million marks ($214 million), of which about 65 per cent is for export and 35 per cent for the home market. Demag has 22 subsidiaries and affiliates employing over 23,000.

Foreign Activity — Next month, Demag will complete an integrated steel plant for Egypt at Helwan with a capacity of 292,000 tons of ingots. It represents Nasser's first step toward increased industrialization. Demag is also helping to build a 1-million-ton plant for Hindustan Steel Ltd., New Delhi, India.

A new plant being constructed for Companhia Siderurgica Mannesmann at Belo Horizonte, Brazil, will have steel capacity of 220,400 tons.

Sollac (France) is adding four, 50-ton converters and three, 150-ton open hearths to increase capacity to 2.5 million tons. Other Demag jobs include a 20,000-ton electric furnace shop and a rod mill for Industrial Development Corp., Rangoon, Burma, and a 20,000-ton plant for International Steel Smelting & Refining Co. in the Philippines.

For L'Organization du Plan, Teheran, Iran, Demag is building a steel plant (capacity: 132,000 tons) and a bar mill. A new open hearth shop completed for Dae Han Heavy Industry Co., Seoul, Korea, is rated at 166,000 tons. Another job is a 166,000-ton open hearth expansion program for the Ministry of National Defense in Argentina.

Early in 1961, Portugal will have a new plant at Seixal, south of Lisbon. With ingot capacity of 276,000 tons, it will make light and medium bar mill sections. Demag entered into an agreement with other German and Belgian firms to win the contract in competition with American, English ,and French companies.

Yet To Come — New Demag orders include two, 100-ton Graef rotor furnaces for South Africa. This reportedly will be the first large commercial installation of the oxygen steelmaking process using a rotating vessel.

Sollac plans installation of four, 110-ton Haldo furnaces of the type in use at Domnarvet, Sweden. In this process, a converter-type vessel is rotated at 30 to 40 rpm while oxygen is blown over the bath.

Demag is building two, top blown, Linz-Donawitz oxygen steelmaking plants for Japan. They are of the type coming into use in the U. S.

Continuous casting will get a new lift on the continent with the completion of a new machine by Demag for the Terni works (near Rome, Italy) for the Finsider steel group. It will make squares 4.3 to 11.9 in. Demag technicians think continuous casting of slabs will be in general use within ten years. Sections 47.2 wide by 7.9 in. thick can be made readily.

Subsidiaries—Demag has manufacturing and sales arrangements with several U. S. equipment makers, including Abbey-Aetna (Toledo, Ohio), E. W. Bliss Co., Canton, Ohio; Sendzimir Co., Waterbury, Conn.; and Aetna-Standard Engineering Co., Ellwood City, Pa.

Products of Demag subsidiaries include contractors' equipment, internal combustion engines, electric motors, and material handling equipment. One "hybrid" is a crane with a fork lift truck attachment for high stacking skid loads of materials.

Demag and Otis Elevator Co., New York, jointly own Flohr-Otis G.m.b.H., Berlin. It builds elevators for the European and export markets. Latest Demag affiliation is with Atomic International Div., North American Aviation Inc. A new jointly owned company, Internationale Atomiaktorbau G.m.b.H., Duisburg, will build atomic power equipment.

Through a new sales subsidiary, American Demag Corp., Pittsburgh, Demag will go after a share of the U. S. market.

This is another in a series of on-the-spot reports on European metalworking by STEEL's editor-in-chief, Irwin H. Such. He is now in Russia to gather material for special articles which will appear in STEEL.

India Plans Growth

She'll multiply her steel capacity, build a heavy machinery industry, gain more self-sufficiency

"INDIA plans to have 10 million tons of steel capacity within a decade," Dr. P. C. Mahalanobis, director, Indian Statistical Institute, told STEEL in an exclusive interview in Cleveland (at Case Institute of Technology). Capacity now: About 1.5 million tons.

Three new government-owned plants of 1 million tons capacity each are included under India's Second Five-Year Plan (1956-61). The two existing privately owned plants are being expanded to 3 million tons total capacity.

"India has more iron ore of better quality than either the U. S. or Russia," he asserted. "But India does not have the capital nor the skilled personnel needed to rapidly develop it." Her nearly 400 million people consumed only about 1 million tons of steel in '57, he said.

Inports Drop—India had been importing about 300,000 tons of steel annually, but that figure will drop "quite a bit" in 1958, said Dr. Mahalanobis. The reason: Shortage of foreign currency. Long term plan: "As her industry grows, her living standards will rise, and she'll do more importing," he predicted.

The nation is now producing only about 4000 tons of aluminum annually. She hopes to have 20,000 tons of capacity in operation by 1961. "Her two greatest needs," said Dr. Mahalanobis, "are a heavy machinery industry and a fertilizer industry." They will be built up when the nation has sufficient steelmaking capacity to support them. "It would cost India $125 million to build 80,000 tons of heavy machinery capacity."

Trucks To Come—In three years, planning will be started for a government-owned heavy truck industry. When asked why the nation had turned to government ownership of industry, he replied: "We relied on private enterprise for 50 years and got only 1 million tons of steel capacity. Under the new system, we plan to have 4 million tons of capacity by the end of 1961." Russia and England are assisting India with long term, interest bearing loans.

New Incentive Plan Pays Off

SLACK-HORNER Brass Mfg. Co., Longmont, Colo., reduced prices 10 per cent, boosted profits 10 per cent, and improved employees' pay 10 per cent—all as the result of a new incentive program.

The small (20 employees) nonferrous foundry replaced a piecework pay plan with the new incentive system about a year ago. Productivity subsequently jumped 10 per cent and has held at or above that level.

First Step—Using records from past years, the firm determined what portion of its costs went to each factor—labor, material, overhead, management and office salaries. It found that income was distributed simply: 50 per cent to labor and 50 per cent to other costs (including a normal return on investment).

"So if we promised labor half of total income, any increase in productivity would boost profits the same amount as workers' income," explains John W. Horner Jr., vice president and general manager. "And we could pass along a part of the improvement to our customers in the form of a price reduction," he adds.

Second Step—Here's how the plan works:

Order number	Selling price
101	$200
102	400
103	360
104	1200

Total income for month	$2160
Labor's share (half of income)	1080
Labor costs for month	969
Bonus	111

The bonus is distributed to production workers and supervisors (the persons eligible) according to their base salary. It works on a sliding scale so that those with the highest base rate get the most bonus.

If labor costs exceed half the total income during any month, the firm carries the difference over into the next month as a deficit. That must be paid from subsequent bonuses. "However, if bonuses are small in subsequent months, we deduct the deficit in installments," says Mr. Horner. "That way, employees still get a bonus, and morale stays high," he adds.

Want To Try It?—Mr. Horner thinks the plan would work well in any nonunionized job shop. Labor's percentage could conform to each shop's ratio of labor costs to total costs, including profit. The bonus can be distributed each pay period (as Slack-Horner does) or on a monthly or quarterly basis.

Other advantages of the plan: 1. It requires little record keeping. 2. It's a good measure of efficiency. 3. It's easy for the workers to understand. 4. All production workers and foremen can participate.

"It might be difficult to establish such a system in a union shop," Mr. Horner admits. Another problem: Overtime pay will increase regular labor costs and thus reduce the bonus, possibly causing employee dissatisfaction. "But, like a lot of other shops, we consider overtime a pain in the neck," asserts Mr. Horner. This is one step toward eliminating it. "We've practically discontinued overtime work," he adds.

There's another way to overcome the overtime problem, Mr. Horner points out: "You can show the employees that overtime pay in itself is a form of bonus."

Interest was shown by some other foundry managers when he explained the plan at the Non-Ferrous Founders' Society meeting in Cleveland, May 20.

Snyder Tool's Howard Maynard says:

1. Look for a banker who will listen to your company and industry problems.
2. Educate your banker so he'll know your business inside and out.
3. Take your banker into full confidence. He can't trust you unless you do.
4. Follow the advice he gives—he's the financing expert.

Sound Financing Helps Small Firms Grow

HOW CAN a small company expand without going into costly long term debt? Howard N. Maynard, president, Snyder Tool & Engineering Co., Detroit, says the answer is to build a sound working relationship with a good bank.

That's what Snyder has done. Since 1951, the company has added $1.3 million in plant and equipment. Employment rose from 250 to 400 in seven years, and sales volume grew from $5.5 million to $15.4 million.

Poor Policy—Mr. Maynard says: "The trouble with too many small outfits is that when they need money they take hat in hand and go shopping to see who might stake them to a loan. High interest rate loans are about all they'll ever be able to get."

Mr. Maynard adds that bankers, too, have a responsibility to their clients. "Our bank believes it should really know and understand a customer's business and problems instead of applying copybook rules for making loans," he declares.

The checklist (above) summarizes Mr. Maynard's advice to firms seeking a sound financial base. Snyder's setup is a possibility for metalworking firms that have an industry and a company history of firm customer commitments.

History—Snyder's financing story really started in 1940 when the family-owned jig, fixture, and drill head manufacturer decided to recapitalize to create more working capital and expansion funds.

By World War II, Snyder was well into the special machinery business. Its defense contracts were financed under Regulation "V," a government program in which Uncle Sam guaranteed repayment to the bank for defense loans. The amount of the loans was based on a percentage of contracts, inventories, and accounts receivable.

Postwar Days—After Regulation "V" was scrapped in 1945, Snyder operated on a combination of revolving credit and a bank term loan until the Korean War. Then large automotive retooling projects brought a need for more working funds.

This demanded greater elasticity in Snyder's borrowing program. With the bank's help, D. S. Harrison, Snyder's treasurer, adapted the philosophy of Regulation "V" formula-borrowing to company use.

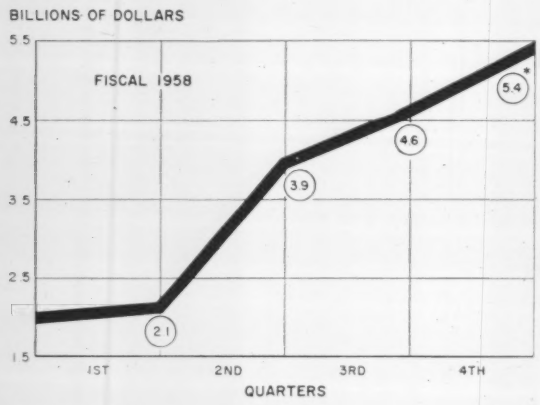
The result is a revolving credit arrangement that gives Snyder a loan formula for its expanded inventories and receivables. Such borrowings are self-liquidating as inventories and receivables shrink.

Good Deal—While this plan has proved successful for Snyder, Mr. Maynard points out: "The reason we've been able to do this is that we've got a good bank that understands our manufacturing and sales problems. We're willing to listen to its advice."

Such a system won't work for firms who want to "milk" profits. Snyder plows profits back into the business. Its working capital now is over $2 million; its net property, plant and equipment, $1.5 million.

Summary—For Snyder, a good banking relationship means a sound growth program at reasonable interest costs. For its bank, Snyder has become a better business risk whose growing assets spell profits for both organizations.

Can Defense Orders Hold the Pace?



*Estimated by STEEL.
Source: Defense Department.

OBLIGATIONS of Defense dollars for major procurements in April fell $700 million below the $2.4 billion pace set in March. (That monthly total was a two-year high.) Obligations in May and June, the last two months of fiscal 1958, will run about $1.8 billion each to meet the Defense Department's goal of ordering about $16 billion worth of major procurement items (aircraft, missiles, ships, vehicles, weapons, ammunition, electronic devices, and production equipment) this fiscal year.

To better understand monthly fluctuations of Pentagon orders, check these figures for fiscal '58:

July, 1957	$289,241,000
August	632,892,000
September	1,229,615,000
October	637,633,000
November	1,234,238,000
December	2,022,686,000
January, 1958	1,179,588,000
February	992,461,000
March	2,412,295,000
April	1,742,000,000

Plans for the first half of fiscal 1959 (last half of calendar 1958) call for the Defense Department to lower monthly orders to about $1.2 billion. The same rate may hold through the second half, but pressure is being exerted to speed new orders as missile and space plans solidify. Example: We are not spending what we expected to spend six months ago on the Nike-Zeus antimissile missile project because a new secret system appears likely to be better.

An early decision to spend enough to complete a system by 1962 will increase orders by 10 per cent in the next six months. The antimissile missile system may cost $6 billion. Probably 10 to 20 per cent of that could be obligated in the first year after a development decision is reached.

Crux: Pentagon orders won't approach the $2.4 billion mark set in March, if Defense can arrange orderly dispersal of orders, month by month, as Congress is demanding. Low obligational figures in the early months of the fiscal year, and high figures in the later months, reflect only a lack of planning, claim some Capitol Hill authorities.

Freeport To Be Heard Again

The troubles of Freeport Sulphur Co. with Rep. Jack Brooks's (D., Tex.) Government Activities Subcommittee will be aired again late this month. The congressman is on the scent of "favoritism" in Freeport's Moa Bay, Cuba, contract to supply nickel and cobalt to Uncle Sam, if it can't get 74 cents a pound for its nickel. This month's hearings may follow one of three angles, guesses John Carrington, Freeport vice president: 1. Office of Defense Mobilization's reluctance to accept a Bethlehem Steel Corp. proposal to do the same job with a government loan but without put rights. 2. The fact that nickel is in heavy supply. 3. The influence of a former Freeport official in the Eisenhower administration.

As fuel for its case, Freeport says it has made good progress toward obviating putting nickel to the government. It has signed contracts with two auto companies and four steel companies (McLouth Steel Corp. is one) to take a "substantial portion" of the 50 million lb of nickel that will come yearly from the project.

The six companies have, in turn, loaned Freeport about $25 million. The contracts are void if nickel falls below 74 cents a pound. If it goes higher, Freeport will sell it to them at a discount. (If anyone else wants this deal, says Mr. Carrington, there are still $5 million in notes available.)

New Fair Trade Bills Introduced

Sen. Hubert Humphrey (D., Minn.) continues to support national fair trade with three new bills: 1. Providing for a federal fair trade system similar to some present state laws. 2. Outlawing loss leaders (selling under cost). 3. Amending the Robinson-Patman Act to prohibit sales at "unreasonably low prices . . . to destroy competition or eliminate a competitor."

Recent decisions by several appliance makers to abandon fair trade caused some to regard the issue as dead. However, Senator Humphrey's move, backed by both liberal and southern Democratic elements, gives it new life.

Capitol Notes

New cost estimates of the interstate highway system are not regarded as "definitive" by the General Accounting Office, Uncle Sam's fiscal watchdog . . . Gross unemployment figures will probably hit 6 million when June graduates flood the job market . . . Budget Bureau predicts a federal deficit of at least $8 billion in fiscal 1959, and a budget of $80 billion for fiscal 1960.

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Industry reacts, wants . . .

Bold Action on Depreciation

STEEL's mail continues to be unusually heavy because of its pleas for depreciation reform as a way to fight the recession (see Apr. 28 issue). STEEL's recommendations: Return to five-year amortization until June 30, 1959, while an industry-government commission has time to prepare for Congress' consideration a permanent, liberal depreciation system. Here's a sample of what some industrialists think of the proposal (for others, see May 19 issue, p. 95):

Herbert I. Segal, president, Van Norman Industries Inc., New York—"I have read your plan 'Fight on Recession.' I suggest permitting users of machinery of all kinds to apply accelerated depreciation to all new machinery bought, received, and installed within 12 months beginning Apr. 1.

"That would provide incentive for buyers of machinery to place orders immediately. Loss of tax income would . . . be offset in major part . . . by added income to the government from re-employed workers and profitably operating companies."

N. M. Forsythe, vice president and general manager, National Automatic Tool Co. Inc.—"It is our conviction that we must drive for reform of both aspects of the problem—'useful lives' and the effect of inflation.

"To fail to allow adjustments in depreciation due to inflation is to continue to penalize users of longer-lived equipment. Even though the law were to allow short useful lives, there is still a great deal of equipment that should be depreciated over periods of ten years or more (such as steel plant equipment)."

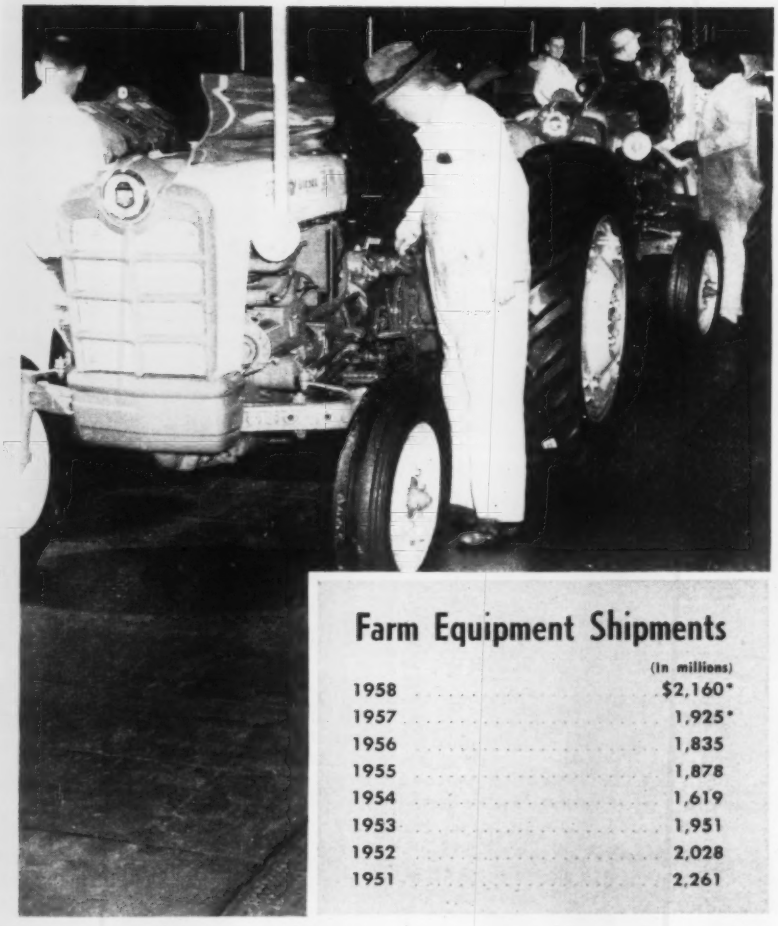
G. G. Beard, president, United Engineering & Foundry Co., Pittsburgh—"The two-point program proposed by STEEL, important as it would be as a tonic for our current national economic problems, has implications of even greater scope. It aims at not just the immediate necessity of reviving business activity but at an essential factor, namely, the maintenance of our system of free enterprise, and perhaps our national survival.

"Increased production and technological progress are necessities of survival as a nation, and survival under a system of individual freedoms requires freedom from inequitable taxation and unnecessarily burdensome regulations. Our government's unrealistic depreciation policy, if continued, can deteriorate and make obsolete our productive facilities to a point where they are, as a whole, uncompetitive with those of other nations.

"Our national strength has been fostered by the dynamic character of our industry. This influence . . . will diminish in direct proportion to our inability to effect modern replacements as required for obsolete facilities and . . . will contribute to industrial stagnation.

"Possibly, there may be other solutions for this situation, but the most effective is to give industry the financial relief it needs to do the job it should.

"Certainly, no sound thinking individual can subscribe to any policy whereby this matter is let drift until, of absolute necessity, the government takes over."



Ford Motor Co.

Farm Equipment Shipments

	(In millions)
1958	$2,160*
1957	1,925*
1956	1,835
1955	1,878
1954	1,619
1953	1,951
1952	2,028
1951	2,261

*Estimated by STEEL. Other figures, Bureau of the Census.

Farm Machinery Sales Up

FARM MACHINERY sales this year show prospect of increasing 10 to 15 per cent over 1957's. Sales last year were about 5 per cent over 1956's.

Executives Are Optimistic—Carl L. Hecker, executive vice president, Oliver Corp., Chicago, believes 1958's sales will climb about 12 per cent above those for 1957. To date, he says, they are about 25 per cent above the year-ago period.

Marc B. Rojtman, president, J. I. Case Co., Racine, Wis., says his firm plans sales volume this year of $170 million, compared with $124 million last year and $86 million in 1956.

Last year's sales ($388 million) were the second highest in the history of Deere & Co., Moline, Ill., says W. A. Hewitt, president. Sales of International Harvester Corp., Chicago, are running about 5 per cent ahead of 1957's and the company expects unit volume to slightly exceed last year's, says Frank Jenks, president. Domestic sales in April were highest for that month since 1955. In the last week of April, the firm's dealers delivered more tractors than in any one week since 1951.

This year can be at least as good as last, observes George C. Delp, president, New Holland Machine Co., New Holland, Pa. Martin R. Sehm, president and general manager, R. Herschel Mfg. Co., Peoria, Ill., anticipates increased sales volume this year.

J. R. Duncan, president, Minneapolis-Moline Co., Minneapolis, says deliveries by dealers to customers are up about 30 per cent over 1957's, and deliveries to dealers are moderately higher.

Reasons for Improvement—Mentioned by executives as main reasons for the industry's health are more prosperous farm conditions, vigorous sales and merchandising programs, new products, alleviation of drought, and the trend to larger farms.

R. S. Stevenson, president, Allis-Chalmers Mfg. Co., Milwaukee, and president of the Farm Equipment Institute, attributes the improvement to better weather, increased farm income, and deferred demand.

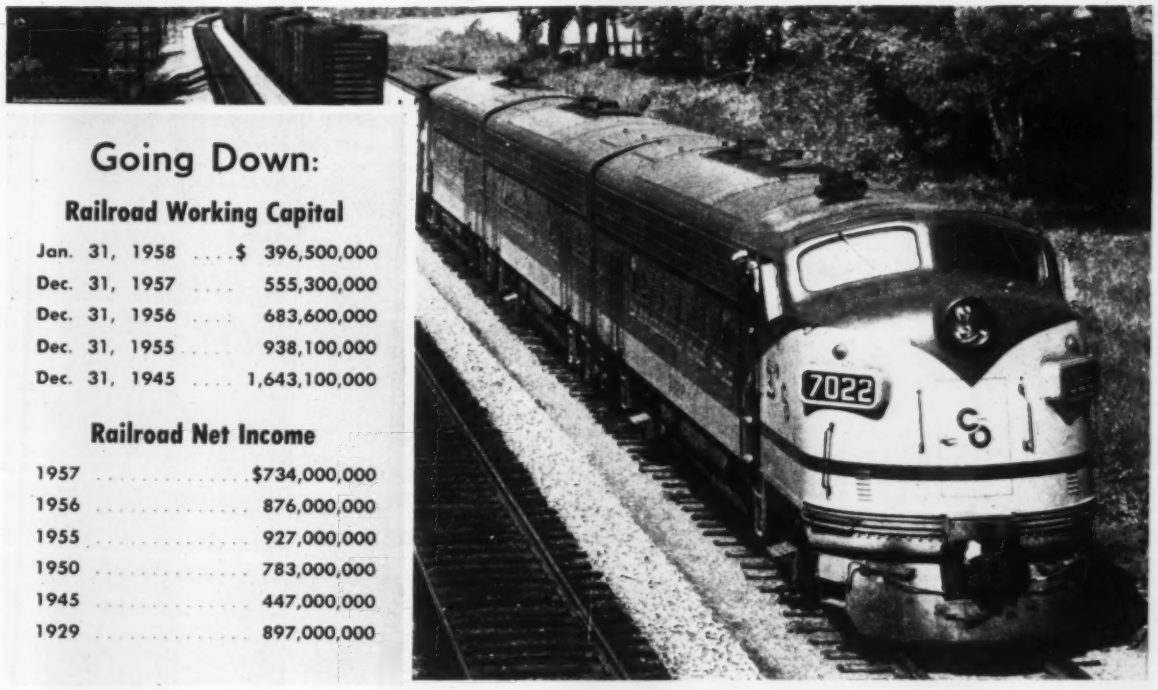
Secretary of Agriculture Benson reports net farm income is running at a $13 billion annual rate, vs. $11.7 billion in the first three months last year. Parity ratio is about 87, highest since April, 1955. In 1957, farmers grossed an estimated $38.5 billion of which a little more than 22 per cent came from nonfarm sources (such as part-time employment and customwork).

Federal officials say 4,855,000 farms were operating in 1957. That was 2.3 per cent under the 1956 figure and 17 per cent below that for 1947. Farm population has decreased almost 5 million since 1950. But smaller farms are the ones dropping out. The size of the average farm is now 240 acres.

Credit and Competition—Farmers seem to be in a strong financial position but credit is available. Also most manufacturers now offer financing plans which supplement bank credit.

Imported farm machinery is not affecting the U. S. market. American-built machinery is preferred.

Shortage of foreign exchange and the desire of other countries to develop their own manufacturing dim prospects of exports of U. S. machinery. The trend is for U. S. manufacturers to establish subsidiary companies overseas. One such company points out that its subsidiary enjoyed a higher business level than did the domestic firm in the first six months of its fiscal year.



Going Down:

Railroad Working Capital

Jan. 31, 1958	$ 396,500,000
Dec. 31, 1957	555,300,000
Dec. 31, 1956	683,600,000
Dec. 31, 1955	938,100,000
Dec. 31, 1945	1,643,100,000

Railroad Net Income

1957	$734,000,000
1956	876,000,000
1955	927,000,000
1950	783,000,000
1945	447,000,000
1929	897,000,000

Rail Troubles Are Pinpointed

U. S. RAILROADS need immediate and long range help, says the Surface Transportation Subcommittee of the Committee on Interstate & Foreign Commerce which is headed by Sen. George Smathers (D., Fla.).

It concluded that trouble stems from many different sources. Paramount are: 1. Development of new methods of transportation which are giving railroads stiff competition. 2. Government assistance to competitors (such as the construction of highways and airports). 3. Overregulation. The subcommittee says the Interstate Commerce Commission and most states dictate to the railroads under "ancient and outmoded" laws. 4. Failure of railroad management to change with the times and to compete aggressively for business by using modern equipment and business methods. 5. Disproportionately high state and local taxes.

Suggested Areas of Aid—The subcommittee charges that railroads are not sufficiently interested in consolidations and mergers. It suggests that joint use of facilities could eliminate waste (such as multiple terminals and yards). Other self-help measures suggested include: Pooling and joint operations to reduce duplication in freight and passenger service. 2. Abandonment or consolidation of nonprofitable branch and secondary lines. 3. Improved routing and handling of freight traffic.

Help by the ICC — Senator Smathers' group didn't miss the ICC either. "Not satisfied that the commission is devoting its efforts to the most fruitful areas of regulation," the subcommittee charged the ICC to examine the Interstate Commerce Act and come forward with recommended legislation.

Congressional Help—An eight-point program was recommended to Congress. It included:

1. Guarantee loans to qualifying railroads unable to obtain financial help through conventional channels.

2. Have common carriers subject to the Interstate Commerce Act establish "construction reserve" funds as a means of obtaining tax deferrals to stimulate reinvestment.

3. Amend the Interstate Commerce Act so that in a proceeding to determine whether a rail rate is lower than a reasonable minimum, only the circumstances surrounding the movement of the traffic by rail shall be considered.

4. Enable the ICC to remove discrimination against interstate or foreign commerce found to result from intrastate rates.

5. Allow the ICC to authorize the discontinuance, consolidation, or curtailment of unprofitable railroad services and facilities.

6. Limit the scope of the agricultural commodities clause under which motor vehicles engaged in the transport of certain commodities are exempt from economic regulation.

7. Make all commercial transportation of commercial commodities by motor vehicle subject to regulation.

8. Provide for a transportation policy study group.

Other Recommendations — The subcommittee also suggested repeal of the 10 per cent excise tax on passenger transportation charges and 3 per cent on freight transportation charges. It also favors the enactment of legislation making 20 years the maximum useful life of railroad property (for tax purposes).

JONES & LAMSON MACHINE TOOLS

the man who needs a new machine tool is already paying for it

Turret Lathe Tracing Pays off Double — and More!

It is hard to select the "best" feature of a J & L turret lathe which is equipped with a tracing unit. It could be the cost saving factor, as in the job illustrated above. Stainless steel forgings are first rough-machined with tools from the hexagon and square turret positions. Then, *in the same chucking*, the tracer is engaged and the parts are contoured to a 16 mu-in. finish at better than 1000 SFM. Manufacturing costs were cut 74%.

Another customer points out broader advantages. He says: "My turret lathe with its tracing attachment is the most versatile machine in my shop. It's a bar machine, a chucker, an engine lathe, and a shaft and cross-center duplicator, combined. No machine could do more, or produce more profits for me."

Write for detailed information. Jones & Lamson Machine Company, 517 Clinton St., Springfield, Vermont.

Turret Lathes • Fay Automatic Lathes • Precision Boring Machines • Thread & Form Grinders • Optical Comparators • Thread Tools

Sales-Production Ratio Pushing Inventories Down

U. S. Car	Production (In millions)		Sales (In millions)		Inventories (In thousands)	
	1958	1957	1958	1957	1958	1957
1st quarter	1.23	1.79	1.07	1.49	865	729
2nd quarter*	1.00	1.58	1.21	1.59	740	735
3rd quarter†	0.60	1.30	0.92	1.39	275	640

Adapted from *Ward's Automotive Reports*. *Estimated. †Projected. Third quarter inventory figures do not include next year's models. Inventory levels are for end of quarter.

Inventories Hold Sales Key

AUTODOM's spring sales boom hasn't met expectations. The industry now hopes it can cut inventories enough in the third quarter to give 1959 models a comfortable start.

The table (above) shows what Detroit hopes to accomplish by the time new cars start appearing. How close it will come to the 275,000 inventory level depends on spring and summer sales. July and August traditionally are slow months.

Fair Hope—One hope for a slight revival: Used car sales have been picking up through April and May, although they still are a good 10 per cent behind last year's.

Walter J. Cooper, general sales manager of Ford Motor Co.'s Ford Div., says: "There is usually a lag of about 45 days between a pickup in used car sales and an upturn in the new car market." But this isn't a "usual" year; Mr. Cooper is not convinced that 1958 will fit the pattern.

First Half—It looks like first half production and sales will total about 2.25 million units. Production won't increase; in fact it will vanish as plants close down in July and August for extended changeover periods. Dealers will have a chance to whack away at inventories which slowly shrunk last month.

Sales have climbed a bit, but it's partly seasonal, and nobody is sure that it'll last. Ford Motor Co. sales are down about 37 per cent for the first four months, and it looks like they'll stay at that level through June. Chrysler is off 44 per cent. General Motors is in fairly good shape: Its sales are down about 20 per cent—close to the average sales loss for most of metalworking.

The Exception—George Romney, American Motors Corp. president, is cheerful. Rambler sales in the second quarter are 72 per cent ahead of those in the same period last year. Latest report estimates more than 85,000 cars have been sold, and the company has been boosting production schedules almost weekly.

Sad — Studebaker-Packard Corp. hasn't discussed sales lately, but Harold Churchill, S-P's president, reports that greater market penetration was made in April than in any previous month. Presumably, the increase has held through May.

S-P had built 12,797 cars by the end of April. It looks like first half production will be in the neighborhood of 18,000 units. A year ago, S-P had produced 37,581 cars at the halfway mark.

Mad—To add to its woes, everybody who can is telling Detroit what it has done wrong and how to correct the situation. Motordom has become a whipping boy for all recession problems, and automakers don't like it.

Harlow Curtice, GM's president, recently retorted (to a senator's suggestion that companies skip '59 model changes): "That's like suggesting a magazine offer the same issue two months in succession but reduce its price the second month."

That example illustrates how knowledgeable many of motordom's critics are—or aren't. The 1959 cars have already been tooled and can't be called back even if the industry were so inclined.

Outlook—Henry Ford II has told Ford Motor Co. stockholders that he expects a minimum of 4.5 million sales for the year, and *Ward's Automotive Reports* indicates that no matter what happens, output can't rise above 5 million cars.

The statistical agency figures that, at best, the industry may turn out 4.8 million units, and, at worst, it will build 4.2 million. Last year,

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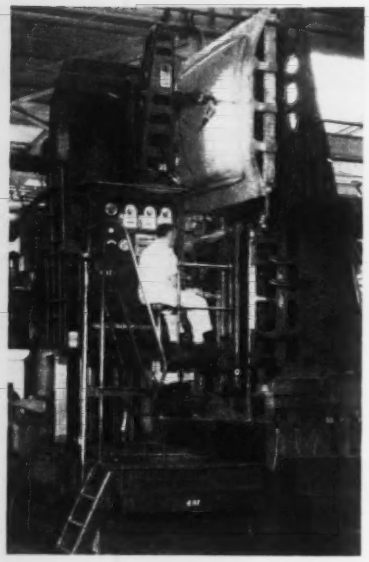

THIS 1959 EDSEL ROOF PANEL is a plaster model being traced on a 97-ton cutting machine in Ford Motor Co.'s Rouge facilities. Stamping die in which roof panels will be formed is being cut out of steel slab positioned beneath model

Detroit produced 6.2 million passenger cars. The previous low point was in 1957 (Output: 3.5 million).

No Cheer—Car builders are being bothered by the sneaking suspicion that car prices will probably have to be jacked up next year—even though such a move wouldn't be popular. Detroit says its profit per car is low (Ford claims it averaged $100 net profit per car with accessories in the last four years) and that it can't afford to absorb the increased costs of steel and the automatic wage boosts it apparently will give to autoworkers.

Stockholders Get Word

Ford Motor Co. expects a sales resurgence in 1959 following this year's disappointing industry projection (4.5 million unit sales). The company will spend less on new plant and equipment next year because it has about completed present expansion plans. Ford seems to be far from convinced that a small car is what the public really wants.

That's the gist of what Henry Ford II, company president, told stockholders at their annual meeting in Detroit. Says Mr. Ford: "The odds favor at least a modest recovery toward the end of the year. However, if this pattern does not develop shortly, strong action will be called for to stimulate business and consumer spending through tax concessions."

Pointing to factors which should make for a stronger market next year, Mr. Ford reports: "Seven out of ten car owners now own their cars outright—free of debt. And about 1 million more auto credit contracts are scheduled to mature in 1958 than in 1957. Private liquid savings are at the highest levels in history, and more than 60 million Americans are employed. All that's needed is a renewal of confidence in the future, and we will be off and running in short order."

Trim Ship—Explaining that in recent years the company has replaced old plant and equipment and has realigned its management structure to be ready for low periods, Mr. Ford says that future expenditures for new plant and equipment will be reduced.

In 1955, Ford spent $251 million on new facilities. In 1956, the figure rose to $530 million; it declined to $376 million last year. This year, the company is spending about $175 million; in 1959, it anticipates expenditures of about $130 million.

Small Cars—Mr. Ford told stockholders that because of tooling lead-times, the decision to build a small car should have been made in the fall of 1955 and at that time there was no evidence that the buying public wanted it. (That does not take into consideration crash tooling programs which could be completed within 18 months.)

As already reported (see STEEL, May 26, p. 71), Ford has been investigating the small car market. According to Mr. Ford, the company finds that economy is the primary reason for buying any car today. Beyond that, customers will pay more for de luxe interior and exterior trim but will hesitate to pay extra for a four-door rather than a two-door model. Buyers will shell out for a 6-cylinder engine if they have a choice between that an a 4-cylinder job as long as there isn't any difference in gasoline economy. Half the small car buyers own another automobile.

Add those facts to the prospects for a leveling off of import sales, plus the fact that more suburban living and more long range travel demand cars with room and fairly high performance, and Mr. Ford says: "It would be a mistake to permit this present preoccupation with small cars to take our minds off the main road we must travel in the years ahead."

Du Pont Plans Disposal

E. I. du Pont de Nemours & Co. Inc., Wilmington, Del., has suggested a plan under which it can follow the Supreme Court's decree that it get rid of its 23 per cent of General Motors stock without penalizing stockholders.

The plan has three main points:

1. Transfer the right to vote Du Pont's 63 million shares from the company to its 185,000 common stockholders on a pro rata basis.

2. Protection of 185,000 Du Pont and 700,000 GM stockholders from market losses that would result from forced stock sales and resulting tax claims. (The company has not spelled out just how this would be done.)

3. A prohibition against Du Pont and GM having any common directors except with court approval.

In effect, the Du Pont proposal would make the firm a receiver of dividends but would take away any decision-making powers it might have.

U. S. Auto Output

Passenger Only

	1958	1957
January	489,357	641,591
February	392,112	571,098
March	357,049	578,826
April	316,503	549,239
4 Mo. Total	1,555,021	2,340,754
May		531,365
June		500,271
July		495,629
August		524,354
September		284,265
October		327,362
November		578,601
December		534,714
Total		6,117,315
Week Ended	1958	1957
Apr. 26	58,664	123,633
May 3	78,434	119,999
May 10	78,506	125,924
May 17	87,407	172,390
May 24	86,082†	127,428
May 31	60,000*	82,431

Source: *Ward's Automotive Reports.*
†Preliminary. *Estimated by STEEL.

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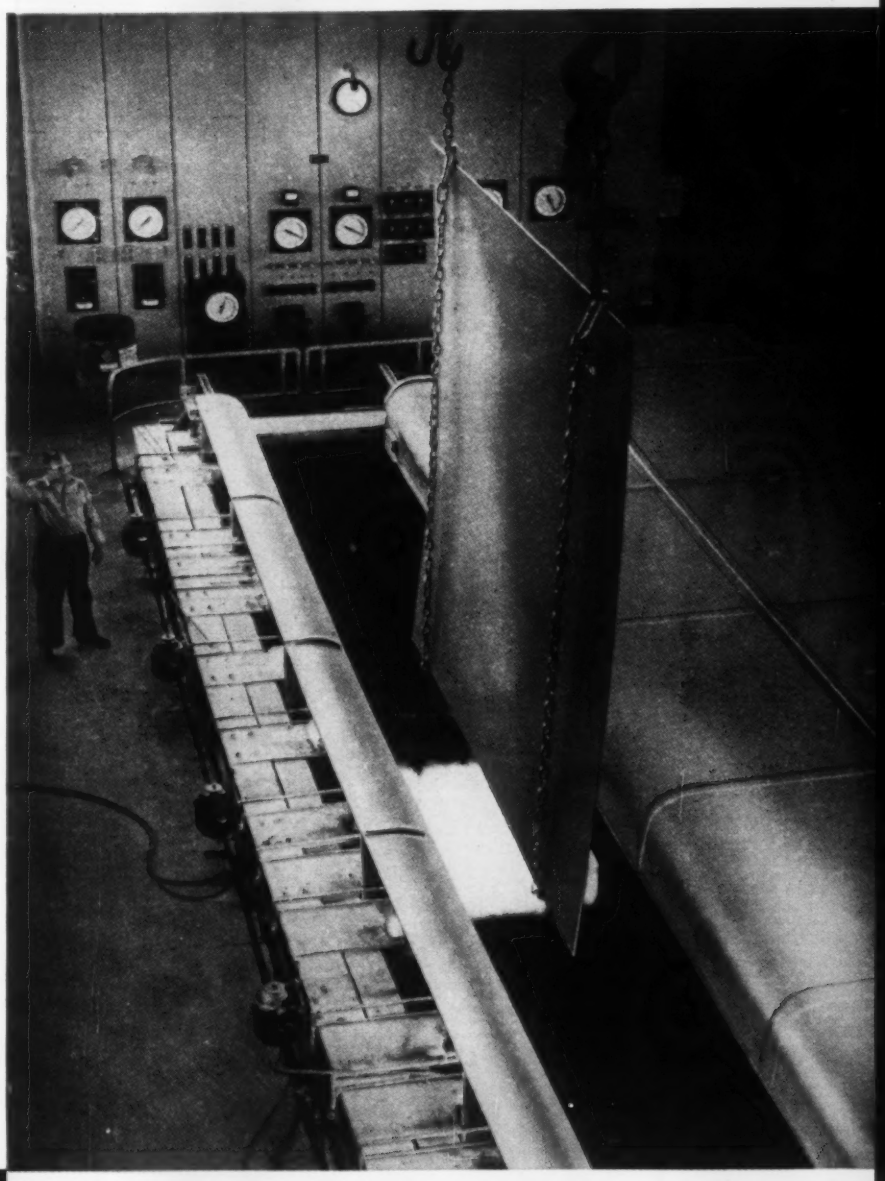

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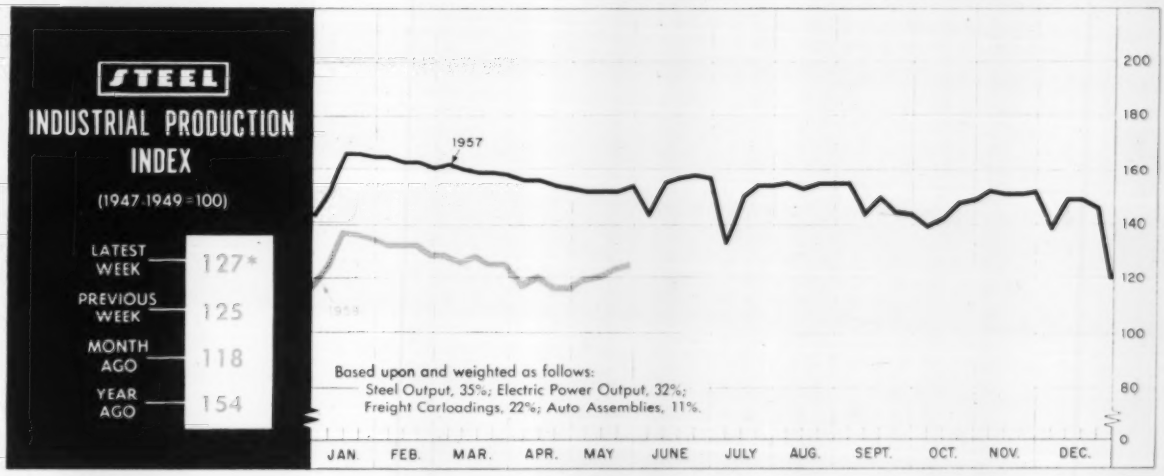

*Week ended May 24.

Upturn Gains Strength in Fourth Week

STUDY of STEEL's industrial production index during the spring seasons from 1953 to date suggests that the current strengthening is the start of the road back, not merely a temporary flurry.

The preliminary reading for the week ended May 24 crept up another 2 points to 127 (1947-49=100), making a total of 9 points the index has gained since the low point was reached in the fourth week in April. That's a 7.6 per cent recovery in one month. In only one of the last five years has the index picked up more points (14 in 1955 when the recent boom was just getting started). In only two has the percentage gain been greater (7.7 per cent in 1954 and 9.5 per cent in 1955). In neither of those years was the uptrend as steep (from mid-April to late June in 1954 and from early April to early June in 1955).

Falloff Due—The strength of the upturn will be tested this week and next. If the index can bounce back up to the approximate pre-Memorial Day level, it must be considered a genuine spring upturn. The drop during the holiday week has ranged from 4 points in 1953 to 10 points in 1955. It is doubtful that the decrease will be more than 8 points this year. Chances are good that it will gain that back within the next two weeks and then go on to set the maximum reading for the first half before the July 4 week sets it back again.

Three of the four segments of the index contributed to the latest rise. (Only electricity output declined.) The continuing rise in steel production is the biggest factor. Most market observers attribute the showing to four factors: 1. An accumulation of orders which makes it economical to start up furnaces. 2. A small amount of price hedging. 3. An effort to balance inventories. 4. A slight upturn in metalworking in general. One indication of the last point is the increase of 8375 cars of miscellaneous freight shipped

BAROMETERS OF BUSINESS

	LATEST PERIOD*	PRIOR WEEK	YEAR AGO
INDUSTRY			
Steel Ingot Production (1000 net tons)[2]	1,526[1]	1,523	2,252
Electric Power Distributed (million kw-hr)	11,300[1]	11,257	11,574
Bituminous Coal Output (1000 tons)	7,715[1]	6,180	9,605
Crude Oil Production (daily avg—1000 bbl)	6,250[1]	6,262	7,457
Construction Volume (*ENR*—millions)	$588.1	$435.4	$338.9
Auto, Truck Output, U. S., Canada (*Ward's*)	112,101[1]	113,998	158,653
TRADE			
Freight Carloadings (1000 cars)	555[1]	561	723
Business Failures (Dun & Bradstreet)	327	279	264
Currency in Circulation (millions)[3]	$30,822	$30,812	$30,645
Dept. Store Sales (changes from year ago)[3]	−2%	−4%	−2%
FINANCE			
Bank Clearings (Dun & Bradstreet, millions)	$23,060	$21,570	$23,417
Federal Gross Debt (billions)	$274.9	$274.9	$272.6
Bond Volume, NYSE (millions)	$28.5	$22.6	$20.6
Stocks Sales, NYSE (thousands of shares)	12,537	13,308	11,179
Loans and Investments (billions)[4]	$91.8	$92.0	$85.9
U. S. Govt. Obligations Held (billions)[4]	$30.5	$30.5	$25.2
PRICES			
STEEL's Finished Steel Price Index[5]	239.15	239.15	228.59
STEEL's Nonferrous Metal Price Index[6]	195.4	195.5	231.5
All Commodities[7]	119.3	119.5	117.1
Commodities Other than Farm & Foods[7]	125.2	125.4	125.2

*Dates on request. [1]Preliminary. [2]Weekly capacities, net tons: 1958, 2,699,173; 1957, 2,559,490. [3]Federal Reserve Board. [4]Member banks, Federal Reserve System. [5]1935-39=100. [6]1936-39=100. [7]Bureau of Labor Statistics Index, 1947-49=100.

Cold Heading Cuts Costs

Fasteners and Small Parts Show Big Savings

One of the most important cost cutting developments in recent years is the increasing use of cold headed fasteners and small parts throughout industry. Parts produced by this process show marked savings when compared to the same production on screw machines. The most obvious advantage is in the economical wire stock used in cold heading. The more expensive bar stock used in the screw machine method results in considerable waste, whereas the waste is almost negligible in cold heading.

Another important consideration is the greater strength structure of parts made by the cold heading method. The blow of the heading tool causes the grain structure of the metal to flow in lines of greater strength whereas the strong outer surface of the screw machine product has been reduced to scrap.

The possibilities of cold heading are almost unlimited when used in conjunction with secondary operations. The tremendous savings in operation and material costs make it a must consideration when designing small parts either as fasteners or as integral units for manufactured parts. It has been a long time policy of John Hassall, Inc. to support their cold heading equipment with the latest methods of secondary manufacture. Machines for roll threading, slotting, drilling, tapping and many other operations are available for your profit.

Given complete specifications, including a drawing and an idea of the application, we can quickly tell you whether or not it will be advantageous to have your fastener or part JOB-DESIGNED by HASSALL. The remaining important aspect of our service to you is the ability to get into production quickly and make prompt shipment.

Write for a copy of our new booklet, "What the Designer Should Know about Cold Heading."

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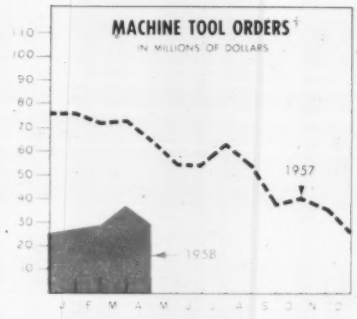
THE BUSINESS TREND



	New Orders 1958	New Orders 1957	Shipments 1958	Shipments 1957
Jan.	26,850	75,500	57,800	99,900
Feb.	28,300	71,900	48,050	103,350
Mar.	36,150	72,750	54,150	115,600
Apr.	28,250*	64,300	51,200*	110,650
May	.....	53,650	.....	104,300
June	.....	52,800	.....	106,950
July	.....	62,650	.....	81,450
Aug.	.....	52,900	.....	78,300
Sept.	.....	36,750	.....	82,050
Oct.	.....	39,700	.....	76,050
Nov.	.....	35,150	.....	59,750
Dec.	.....	24,850	.....	70,100
Totals	.....	642,900	.....	1,088,450

†Metal cutting and metal forming.
*Preliminary.
National Machine Tool Builders' Assn.
Charts copyright, 1958, STEEL.

	1958	1957	1956	1955
Jan.	93.07	126.34	122.43	97.00
Feb.	93.49	139.29	129.56	98.71
Mar.	97.89	140.76	166.14	149.16
Apr.	.....	132.67	145.20	109.52
May	.....	157.95	155.53	110.50
June	.....	121.57	189.13	139.00
July	.....	128.31	165.50	111.76
Aug.	.....	110.09	168.70	106.20
Sept.	.....	116.79	130.35	136.80
Oct.	.....	124.80	143.38	123.52
Nov.	.....	87.80	138.50	118.09
Dec.	.....	105.65	117.76	139.85
Avg	.....	124.34	147.68	120.01

Material Handling Institute Inc.

by the railroads during the week ended May 17. (This category includes metalworking products.)

Carloadings Jump—The second most important reason is the rise in freight carloadings. In addition to the hike in miscellaneous freight, both coal and ore loadings contributed to an increase of 25,561 carloads during the week. This sector could get appreciably stronger if the steelmaking rate holds at present levels or rises. Some major ore docks on the lower lakes have yet to see their first activity this season.

Auto and truck output has held at about 104,000 units a week for the last two weeks of record, and this could be the level during most of June. Then, unless sales strengthen considerably, major producers will begin to close down for model changeovers. That will hold the index back for two or three months. But motordom will be the biggest gainer in the anticipated upturn in the late third or early fourth quarter.

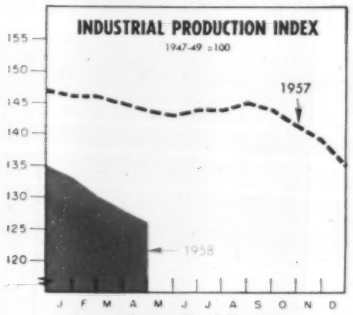
MT Orders Sink Again

How far the fall upturn can go without the help of a capital goods boom is the big question. Few economists or businessmen expect more than faint rumblings from this part of metalworking before mid-1959 or 1960. The report of the National Machine Tool Builders' Association for April confirms this publication's earlier observation that prospects for an early revival are poor (Apr. 21, p. 149).

Net orders for both cutting and forming tools dropped from March's $36,150,000 to $28,250,000, practically equal to the February level. The drop in domestic orders overbalanced the gains in foreign bookings, which reached their 1958 high at $7.6 million. Shipments amounted to $51.2 million, continuing the 2½ year cut into backlogs. (See table and chart above.)

One prominent tool builder feels that the industry is still on the way down, although the pattern during the next few months might be described as "bouncing along the bottom." He says there is no known programming which will change the trend significantly in the foreseeable future. There may be a slight upturn in the fall, but it will fall far short of what the industry needs to maintain a satisfactory backlog.

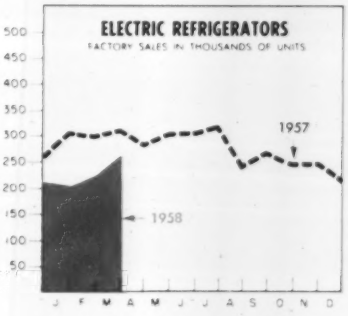
"In over a half century, there have been only two conditions which have spurred the machine tool industry to peak levels: 1. War. 2.



(Seasonally Adjusted)

	Total Production		Primary Metals		Metal Fabricating	
	1958	1957	1958	1957	1958	1957
Jan.	133	146	100	143	159	180
Feb.	130	146	95	143	153	180
Mar.	128	145	91	137	150	179
Apr.	126*	144	86*	134	148*	176
May	...	143	...	132	...	175
June	...	144	...	132	...	177
July	...	144	...	133	...	177
Aug.	...	145	...	136	...	177
Sept.	...	144	...	131	...	174
Oct.	...	141	...	128	...	168
Nov.	...	139	...	121	...	170
Dec.	...	135	...	107	...	163
Avg	...	143	...	132	...	175

Federal Reserve Board. *Preliminary.



	Units		
	1958	1957	1956
Jan.	206,100	305,400	308,900
Feb.	227,800	298,700	316,000
Mar.	261,100	309,300	403,500
Apr.	.....	281,600	353,300
May	.....	303,700	346,800
June	.....	305,100	354,400
July	.....	318,000	351,000
Aug.	.....	240,500	307,600
Sept.	.....	265,200	277,300
Oct.	.....	245,500	212,200
Nov.	.....	246,400	211,600
Dec.	.....	214,600	257,400
Totals	.....	3,334,000	3,700,000

National Electrical Mfrs. Assn.

Extensive capital goods programs in the auto industry. We don't see either condition coming for some time," he explains. His prediction for shipments of metal cutting tools in 1958: $450 million.

Awards Second Highest

Optimism continues to be the key word in the construction industry. *Engineering News-Record* reports that engineering construction awards hit the second highest weekly total of the year at $588.1 million during the period ended May 22. This brought the cumulative total for 1958 to $7.3 billion, only 4 per cent under the corresponding 1957 figure. That's the smallest gap so far this year.

Public works contracts set a high for the year at $346.9 million. Industrial building contracts continue to show weakness, recording only $34.5 million for the week.

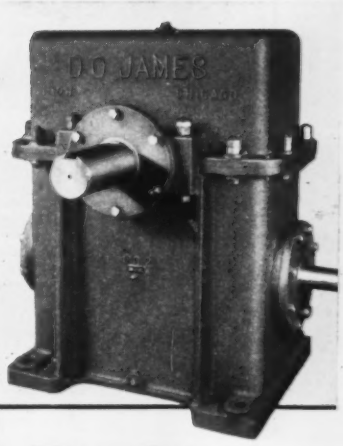
Failures Continue Uptrend

After taking a short breather, business failures once again passed the 300 mark (see Barometers of Business, Page 53), reports Dun & Bradstreet Inc. At the current rate, failures will exceed the 1957 total of 13,739 by a wide margin and set a post-World War II record. (The all-time record of 31,822 was set in 1932.)

In a special analysis of 1957's failures, D&B reveals that the failure rate per 10,000 listed concerns last year was 52, the highest since 1941 but well below every year but three in the 1920-41 period. Total liabilities of $615.3 million were the highest since 1932. D&B points out that the significance of the figure dwindles appreciably in relative weight when compared with the rising sales of manufacturing, wholesaling, and retailing businesses ($676 billion in 1957).

Despite the beginning of the recession last year, the smallest businesses (liabilities less than $5000) declined in number of failures from 2032 in 1956 to 2001. The largest companies (liabilities over $1 million) also fared better, dropping from 49 the year before to 45. The largest increase came in the $5000 to $25,000 group, which accounted for 48.8 per cent of the total.

The number of firms in business over ten years represented 19.3 per cent of the total, the highest percentage since 1946. But businesses less than five years old still accounted for the bulk of the failures.



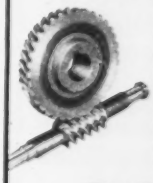
D.O. JAMES

WORM GEAR SPEED REDUCERS

THE D.O.James Worm Gear Speed Reducers cover a wide range of ratios and horsepowers . . . and feature the advantages of right angle shaft arrangement, minimum of moving parts, accurate meshing of precision produced worm gearing, anti-friction bearing mountings and tested lubrication. The proven efficiency, long life and compactness of this type of gear reduction makes them the "MUST Reducer" for many power saving installations.

They are designed and built by an organization that has been making Gears and Gear Reducers for Seventy Years. May we serve you?

Extensive Worm Gear Making Facilities



D. O. James Worm Gear teeth are generated on tangential feed hobbing machines by tapered and ground hobs. We make worm gears from 1" to 80" in diameter and from 24 DP to 1 DP.

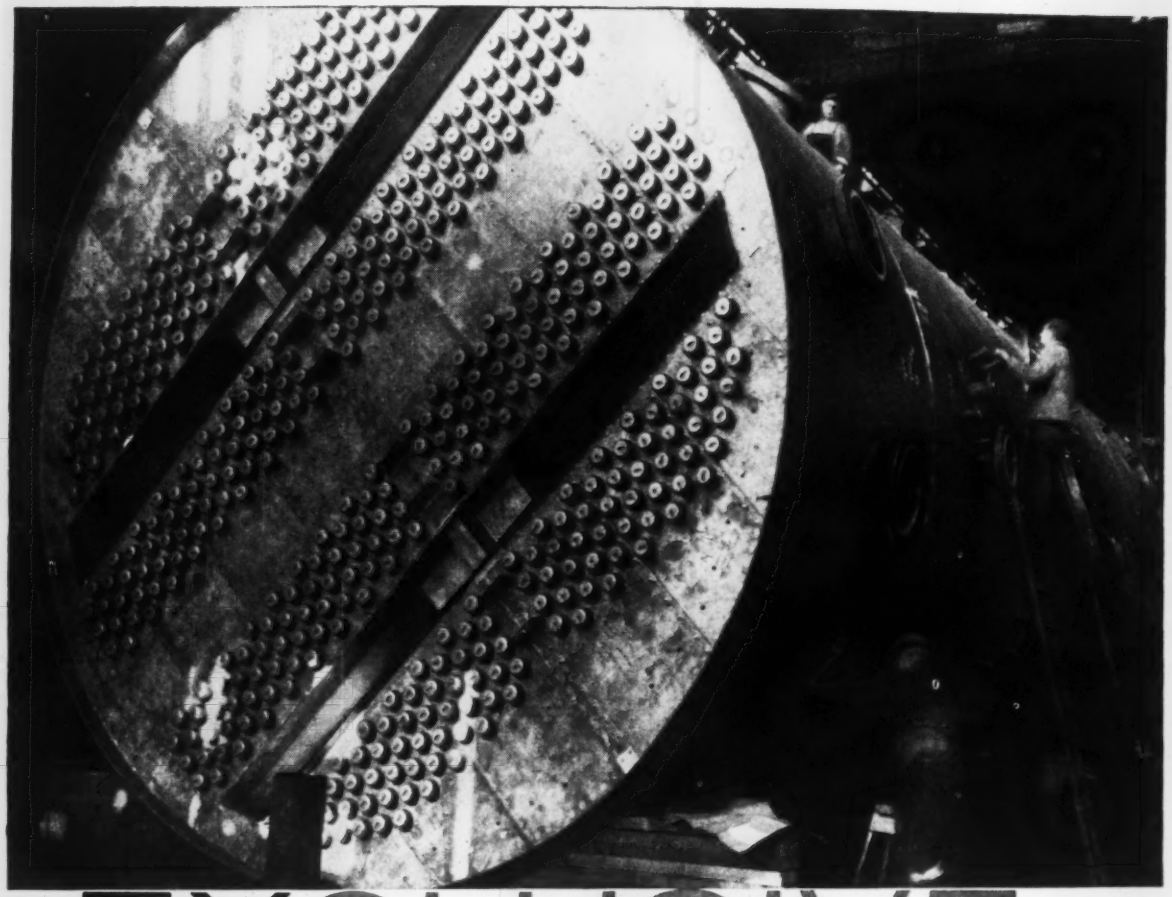
D.O. JAMES
GEAR MANUFACTURING CO.
1140 W. Monroe Street, Chicago, Illinois

Since 1888

MAKERS OF EVERY TYPE OF GEAR AND GEAR SPEED REDUCER

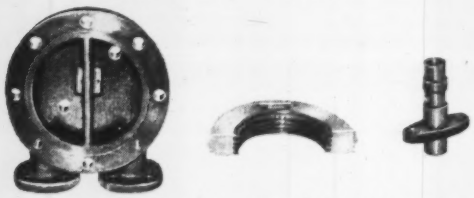
SEND FOR CATALOGS

Catalogs and price lists covering worm gear speed reducers (the right angle drive) are available to power transmission engineers. Please request on Company Letterhead — we'll mail your copy at once.



EXCLUSIVE...

At Sun Ship, STAINLESS STEEL is synonymous with EXCLUSIVE, because Stainless is never exposed to contamination by fabrication with ordinary carbon steel tools.



Working with the 300 to 400 series of alloys, clad steel, aluminum and other alloys, Sun fabricates pressure vessels, tanks, towers, troughs, autoclaves, reactors, hoppers, platework and machinery in all sizes and types. Each to exact specifications. Each with an additional quality feature... EXCLUSIVE.

SUN SHIP
BUILDING & DRY DOCK CO.
CHESTER, PENNSYLVANIA

SILAS S. CATHCART
Illinois Tool Works v.p.

DWIGHT W. KAUFMANN
Crucible Steel div. mgr.

EUGENE H. BROOKS
Continental Gin president

RYAN SADWITH
Ind. Washing Machine posts

Silas S. Cathcart was elected vice president, **Illinois Tool Works**, Chicago. He continues as general manager, Fastex Div., Des Plaines, Ill.

Dwight W. Kaufmann was made manager of **Crucible Steel Co. of America's** Titanium & Vacuum Metals Product Div., Midland, Pa. He was product manager of the titanium division formed last December when Crucible acquired Rem-Cru Titanium Inc. At the Sanderson-Halcomb Works, Syracuse, N. Y., **William G. Slack** replaces **J. F. Murphy**, retired, as superintendent of the bar finish and inspection department. **Joseph G. Eckert** replaces Mr. Slack as superintendent, conditioning and billet yard. **Richard E. Parrish** was made superintendent of engineering and maintenance at the Park Works in Pittsburgh, succeeding **A. G. Nicola**, transferred to the Sanderson-Halcomb Works.

James A. Schilpp was made director of purchasing and traffic for the refractories division of **H. K. Porter Company Inc.**, Pittsburgh.

Delmer L. Buttrey was appointed general manager-manufacturing, **R. C. Mahon Co.**, Detroit. Prior to joining the company four months ago, Mr. Buttrey was plant manager, Blue Island, Ill., for American Radiator & Standard Sanitary Co.

Glenn R. Smith was made sales manager, Electric Service Works, Philadelphia, **Delta - Star Electric Div.**, H. K. Porter Company Inc.

Eugene H. Brooks, former executive vice president, was elected president and chief executive officer of **Continental Gin Co.**, Birmingham. He succeeds **Merrill E. Pratt**, now chairman. **Richard T. Dorsey** was elected vice president of the gin division.

Edward C. Kinnaman was promoted from quality control manager to production manager of **Alloy Precision Castings Co.**, Cleveland.

Nathaniel Cannistraro was made vice president-sales and marketing, **Bettinger Corp.**, Waltham, Mass. He was general sales manager.

George Yeckley was named to the new post of director of purchasing at **Anderson Electric Corp.**, Birmingham.

Donald L. Block was made chief industrial engineer, **United States Steel Supply Div.**, Chicago, U. S. Steel Corp.

J. H. Hatch, vice president-production manager, **Union Wire Rope Co.**, Kansas City, Mo., was elected president-general manager to succeed **M. G. Ensinger**, now chairman. **Maurice B. Hansell Jr.** was made vice president-production manager. **George P. Lacy** was appointed vice president-general sales manager, wire and wire rope products, succeeding **L. B. Schraub**, who continues with the firm on a consulting basis.

E. W. Schoen was appointed chief metallurgist, **Huck Mfg. Co.**, Detroit.

Ryan Sadwith was made secretary and general manager, **Industrial Washing Machine Corp.**, Matawan, N. J. He was vice president and director of manufacturing for J. O. Ross Engineering Corp., and also president of John Waldron Corp.

J. L. Kerins was appointed an assistant vice president-industrial engineering, **United States Steel Corp.**, Pittsburgh. **F. B. Varner** succeeds Mr. Kerins as general transportation manager. **N. C. Halleck** was made assistant general transportation manager.

Sun Tube Corp., Hillside, N. J., subsidiary of American Can Co., elected as vice presidents: **Nicholas Marchak**, in charge of commercial development and research; **Claude L. Alexander**, sales, advertising, and sales promotion; **Kenneth G. Michel**, manufacturing at the Hillside and Washington, N. J., plants.

A. D. Richardson Jr. was elected president, **Ironsides Co.**, Columbus, Ohio. He succeeds **Hugh M. Bone**, now chairman and treasurer. **John R. McPhee** succeeds Mr. Richardson as vice president-general manager.

Dan W. Burns was elected president, **Huffard Corp.**, El Segundo, Calif., subsidiary of Siegler Corp.

James Knowles was made executive assistant to John Dykstra, vice president-manufacturing, **Ford Motor Co.**, Dearborn, Mich.

J. L. Chase was appointed Detroit district sales manager, press division,

STEPHEN J. TOMPKINS

GEORGE W. GIBSON

new posts at Dodge Div.

ROBERT W. EILER

A. R. MEYER

National Supply vice presidents

E. W. Bliss Co., succeeding **F. P. O'Keeffe**, retired.

Stephen J. Tompkins was made chief engineer and director, truck product, **Dodge Div.**, Chrysler Corp., Detroit. **George W. Gibson** was named chief engineer and director of car product. In these newly created posts, they are responsible for product and volume planning, and co-ordination of market and engineering research.

Grover C. Durham, eastern region manager at New York for **Buick Motor Div.**, General Motors Corp., was named manager of market research, with headquarters in Flint, Mich. He is succeeded by **Arthur J. Kemp**, former manager of the southwest region at Dallas. **E. A. Zimmerman** becomes manager, southeast region, Atlanta, succeeding **Clyde C. Darby**, retired.

Earl P. Sullivan was made district manager; **Wallace W. Denhoff**, assistant district manager in the Chicago sales office, **Binks Mfg. Co.** **George Knetl** was named assistant director of engineering and research for the company.

J. W. Wood was made general manager of the newly created automotive division of **Flexonics Corp.**, at Inkster, Mich.

John P. Rubie was made manager-materials, magnetic material section, **General Electric Co.**, at Edmore, Mich.

D. L. Gallogly was made chief engineer, **Cooper-Bessemer Corp.**, Mt. Vernon, Ohio. He was assistant executive engineer. He succeeds **E. Frederick**, retired.

Robert W. Eiler and **A. R. Meyer** were elected vice presidents of **National Supply Co.**, Pittsburgh. Mr. Eiler has been secretary since 1939. Mr. Meyer became manager, export division, in 1952.

John M. Higinbotham was made assistant sales manager, Buffalo district, **Republic Steel Corp.** He was executive vice president of W. A. Case & Son Mfg. Co.

Donald J. Wallace was named district sales manager, **Duff-Norton Co.**, with headquarters in New York. He was eastern district sales manager, Coffing Hoist Div.

Marcel A. Cordovi joined the atomic power development section, development and research division, **International Nickel Co.**, New York. He was manager, material and testing department, atomic energy division, Babcock & Wilcox Co.

Dwight L. Webb was made manager, Kansas City, Mo., branch, **Wheeling Corrugating Co.**, to succeed **Joseph P. Byrne**, retired.

George A. Medsker was made Cleveland branch manager, **Gregory Industries Inc.** **George E. Kennedy** was made Chicago branch manager.

Russell L. Lawson, former vice president, Central Scientific Co., was named director of merchandising for **Hettrick Mfg. Co.**, Toledo, Ohio.

J. R. Reinsma, general service manager, Alemite & Instrument Div., **Stewart - Warner Corp.**, Chicago, was named manager of industrial sales of Alemite lubrication products. He is succeeded by **W. J. Hawkins.**

Louis B. Kazmerowski was made production manager; **Louis J. Pace**, general production superintendent of **Chrysler Corp.'s** Delaware assembly plant at Newark, Del.

Robert T. Sullens was named controller, **Patterson Foundry & Machine Co.**, East Liverpool, Ohio.

Donald H. Ninow was named manager of the Moline, Ill., branch office, **American Air Filter Co. Inc.**, to succeed **Frank Tyler**, retired.

Otto Greven was made production director in charge of manufacturing at all plants of **Donaldson Inc.**, St. Paul.

William D. Hedges was elected vice president-research and development, **Columbus Coated Fabrics Corp.**, Columbus, Ohio.

J. Robert Killpack was elected comptroller of **Ferro Corp.**, Cleveland. He succeeds the late **Joseph C. Wessel.**

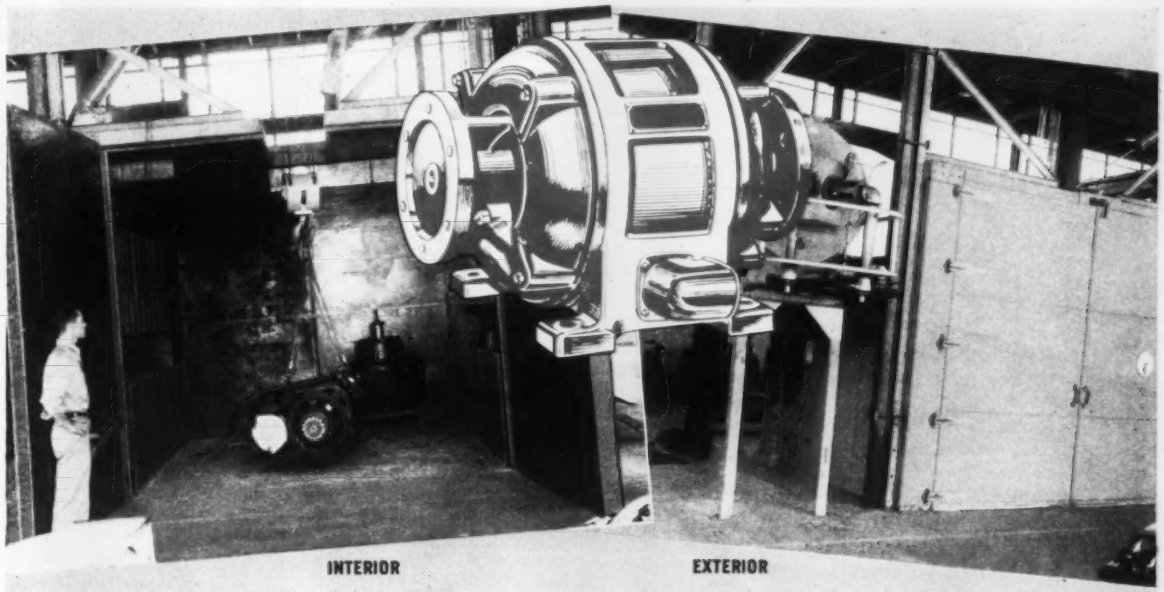
Robert E. Coates joined the Eddystone, Pa., division of **Baldwin-Lima-Hamilton Corp.** as assistant sales manager, hydraulic turbines.

Roger Hezarifend was made chief engineer, **Trimount Instrument Co.**, Chicago.

Sidney Hamel was made industrial sales director for **Trim Alloys Inc.**, Boston.

Al Trail, who headed the Rochester, N. Y., office of **Vickers Inc.**, was promoted to district sales manager, Cleveland office. He replaces **Arthur**

NOW! faster motor repair with...



INTERIOR EXTERIOR

DESPATCH double duty RECLAIMING OVEN

✓ *Burns off old insulation and windings*
✓ *Bakes on varnish and finishes*

Stripping and rebuilding operation costs are cut to the minimum, and work output increased, with the new DESPATCH Reclaiming Oven.

A withering 700°F. controlled temperature burns off old insulation and windings from motors, stators, coils, armatures, other electrical parts and machinery. By doing in minutes the major part of a job that could take hours by older, conventional stripping methods, this DESPATCH oven overcomes one of the principal problems of motor rewinding and rebuilding.

At lower temperatures, the same oven bakes varnish onto the new windings, making insulation permanent, so motors, parts and equipment get out of the repair station in shortest possible time, with no time out for drying.

There is a DESPATCH Reclaiming Oven in a size to fit every plant. Ovens are available from the smallest production model (30 x 40 x 56 inches, inside dimensions) to large, custom-built installations of the type illustrated, above.

The controlled temperature buildup, positive air control, uniform heat and cooling control, combine to assure complete burnoff with protection against damage to treated motor parts. And . . . multiple safety devices make it "the safest oven available."

WRITE TODAY for name of your nearest supplier. Ask for Bulletin No 81K covering the DESPATCH *Double Duty* RECLAIMING OVEN.

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619 S. E. Eighth St., Minneapolis 14, Minn.
Sales and Service in All 26 Principal Cities

DESPATCH

PIONEERS IN ENGINEERING HEAT APPLICATIONS FOR INDUSTRY

JOHN K. BEIDLER
Dravo v. p.-commercial

DR. NICHOLAS A. BEGOVICH
Hughes Aircraft dir.-eng.

M. H. TEMPLE
Rheem Mfg. div. v. p.

Van Wormer, transferred to head the Detroit sales office.

John K. Beidler was named vice president-commercial, **Dravo Corp.,** Pittsburgh. He heads sales, marketing, and new product activities. Mr. Beidler has been general manager, machinery division, and a vice president. **Harold R. Mantle** was made assistant to executive vice president.

William L. Fisher was made eastern district sales manager, **Aronson Machine Co.,** Arcade, N. Y.

J. H. Werner was made assistant sales manager, **Lee Wilson Engineering Co.,** Cleveland. He was Chicago district manager.

Ralph Bowden was made western district sales manager, **Lyon Stainless Products Div.,** Lyon Inc., with headquarters in Los Angeles.

William C. Stonehouse Jr. was appointed director of industrial relations for **Latrobe Steel Co.,** Latrobe, Pa.

Target Central Corp., Kansas City, Mo., named **Leon Baker** vice president-distribution.

Dale Schmidlin was elected president and general manager, **Rold-Rite Metal Products Co. Inc.,** Genoa, Ohio. **Robert N. Lindner** was made sales manager.

Paul W. Steen was appointed manager of distributor sales for **Narda Ultrasonics Corp.,** Mineola, N. Y.

H. Henry Sinason, former works manager, Modern Alloys Inc., joined **Lobeck Casting Processes Inc.,** New York, as technical manager. He succeeds **Gerd Beckmann,** resigned.

Dr. Nicholas A. Begovich was appointed director of engineering, **Hughes Aircraft Co.'s** ground system group, Fullerton, Calif. **Dr. William T. Clary Jr.** was made head of the system analysis department; **John W. Bozeman,** director of the data processing laboratory; **Robert Polkinghorn,** director of the radar laboratory; **Samuel Langberg,** head of engineering service department.

Edwin S. Satin was made assistant manager, international division, **F. J. Stokes Corp.,** Philadelphia.

Clarence Dunlop, vice president, **Burroughs Corp.,** Detroit, fills the new post of vice president-manufacturing facility planning. For the last few years, he has been serving overseas in an advisory capacity for Burroughs European manufacturing operations.

Lodge & Shipley Co., Cincinnati, appointed **J. Hubert Cuni** vice president and director of industrial relations. **Joseph A. Brinkman,** former secretary-assistant treasurer, was made secretary-treasurer. **W. A. Ott** was appointed controller.

Robert G. Van Keuren heads **Norton Co.'s** newly created product engineering department, Worcester, Mass., as manager of product engineering. **Frank G. Gustafson** was named supervisor of sales engineering.

Albert W. McAbee was appointed assistant manager of sales, plate and structural products division, **Inland Steel Co.,** Chicago, effective July 1. He will succeed **Lawrence Chamberlain,** appointed manager of the new Houston district sales office.

M. H. Temple was elected vice president-general manager, **Richmond Plumbing Fixtures Div.,** Rheem Mfg Co., at Metuchen, N. J. Former vice president-assistant general manager, he succeeds **John J. Hall,** who relinquishes his post as president to devote full time to duties as a Rheem corporate vice president and member of its executive committee.

John F. Dolan was made assistant to the vice president-sales, **Lamson & Sessions Co.,** Cleveland, effective June 1. He has headquarters in Cleveland. Formerly general manager, Chicago division, he is succeeded by **J. Wallace Nall. William B. Manning** and **Felder Wright** were made district sales managers, Birmingham division.

DeWalt Div., American Machine & Foundry Co., Lancaster, Pa., promoted **Hugh Johnson** from purchasing agent to the new post of director of materials. **Frank Zecher** was made purchasing agent.

Don Cartwright, former sales manager, Misco Fabricators Inc., joined **Aluminum & Architectural Metals Co.,** Detroit, as sales manager, in charge of the heat treating and industrial processing accessories division.

W. W. Weeks was made manager of power piping for **Blaw-Knox Co.'s** power piping and sprinkler division, Pittsburgh. He was vice president, construction division, B. F. Shaw Co.

Harvey R. Hiller was appointed assistant district sales manager, Chicago district, **Harbison-Walker Refractories Co.,** Pittsburgh.

Ross H. Begg Jr. was promoted to assistant to the general manager at **Pratt & Whitney Aircraft,** East Hartford, Conn. He was executive engineer.

OBITUARIES...

Dr. Vsevolod N. Krivobok, 65, supervisor of the stainless steel and heat-resistant alloy section, development and research division, **International Nickel Co. Inc.,** New York, died May 17.

Charles W. Yount, 70, chairman, **Eagle Machine Co.,** Indianapolis, died May 18.

16 Ton "Gas Mask" for a Blast Furnace

Diversity in the production of steel castings is routine in the foundries of Erie Forge & Steel Corporation. For example, this cast steel blast furnace bell.

The 16 ton lower bell casting teams up with the one ton cast steel upper bell to distribute solids to the blast furnace without loss of gasses . . . a job which requires high quality steel of accurate as-cast dimensions.

From the beginning of the steelmaking process the raw materials are tested at frequent intervals to assure the quality of the steel . . . careful metallurgical and engineering control from scrap pile to finished casting. This is standard operating procedure at Erie Forge & Steel in the manufacture of steel castings and forgings which meet the widely diverse demands of industry . . . another of the many reasons your Casting and Forging requirements are in competent hands here. Consult with us.

ERIE FORGE & STEEL CORPORATION

ERIE, PENNSYLVANIA

MEMBER AMERICAN IRON AND STEEL INSTITUTE

New Plant Fattens Aluminum Supply

Ormet's reduction facility in Ohio will provide 180,000 tons of primary metal annually

ALUMINUM has started to flow from Ormet Corp.'s $110-million plant between Clarington and Hannibal, Ohio. This is the nation's second largest aluminum reduction plant.

The facility has an annual capacity of 180,000 tons of primary aluminum. "We have one of our reduction potlines in routine production and have a daily output of about 100 tons of metal," says W. F. O'Connell, president of Ormet. "The remaining four lines will be brought in at 60-day intervals and we will be in full production by the end of the year."

Joint Ownership—Ormet is owned by Olin Mathieson Chemical Corp. and Revere Copper & Brass Inc., New York. Of the annual output, Olin Mathieson will receive 120,000 tons; Revere, 60,000.

In addition to the reduction plant and Ohio Power Co.'s Kammer plant at Cresap, W. Va., the $285-million complex known as Ormet includes an alumina plant in Louisiana, a fleet of barges and a towboat for transporting alumina up the Mississippi and Ohio Rivers to the reduction plant, and three ore ships for transporting bauxite to the Louisiana plant from the mines in Surinam.

Ormet's alumina plant will have an annual capacity of 345,000 tons of alumina. It will start production in June and will make its first shipment of alumina in early summer.

The huge Olin Mathieson aluminum rolling mill is adjacent to the Ormet reduction plant. It will produce flat and coiled rolled aluminum products. Mr. O'Connell, who is also senior vice president in charge of Olin Mathieson's Aluminum Div., reports that the rolling mill will be completed later this year and some equipment is now being "shaken down."

Olin aluminum is also produced at plants in Chattanooga, Tenn.; Gulfport, Miss.; and Riverside, Calif. The combined production of the four plants will make Olin Mathieson the country's fourth largest aluminum company.

Crane operator controls the pouring of molten aluminum into 1000-lb pig molds from a 7000-lb capacity crucible

Installs Annealing Units

Five spheroidizing bell-type furnaces are being installed at the Waukegan (Ill.) Works of American Steel & Wire Div., U. S. Steel Corp. Each furnace is capable of producing 1650° F heat for the annealing of wire. The five new units will increase spheroidizing capacity by 75 per cent, says V. L. Strohm, general superintendent of the plant.

Improves Buffalo Plant

American Brass Co., Waterbury, Conn., will spend $100,000 for improvements at its Buffalo plant. This is in addition to a $1.5-million modernization and expansion program which is nearing completion. The new program will involve installation of welding equipment to make longer copper coils and for copper tube bending equipment.

Dowell Becomes Division

Dowell Inc., Tulsa, Okla., a wholly owned subsidiary of Dow Chemical Co., Midland, Mich., became a division of Dow on May 31.

Makes Pearlitic Malleable

New facilities for production of pearlitic malleable iron castings have been put into operation by American Malleable Castings Co., Marion, Ohio. Use of pearlitic malleable has increased tenfold in the past decade. In many industries, it is replacing more costly metal parts and fabrications.

Leases Titanium Plant

National Distillers & Chemical Corp., New York, has leased from Stauffer Chemical Co., with an option to purchase, its recently completed titanium tetrachloride plant at Ashtabula, Ohio. The plant has a capacity of 50 million lb a year. It was built to supply titanium tetrachloride to National Distillers' titanium sponge plant, also at Ashtabula. The sponge plant was transferred to Mallory-Sharon Metals Corp. last year.

Hawaii To Get Steel Mill

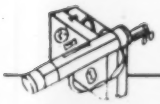
Construction of a semi-integrated steel plant in Hawaii is expected to get underway around Jan. 1, says George Mason, director, Economic Planning & Co-ordination Authority for the islands. Final arrangements are being made to form a Hawaiian steel company.

The projected plant will have a rated capacity of 30,000 tons of ingots a year. Its end product will be reinforcing bars. The islands imported 17,000 tons of this product in 1956 and 22,000 tons in 1957.

Unit cost of the bars is expected to be above the mainland level, but without the $27 a ton freight charge from the U. S. the final delivered price is expected to be less.

Refractory Units Joined

Corning Glass Works, Corning, N. Y., and Corhart Refractories Co. Inc., Louisville, have consolidated their refractory sales, product promotion, and product engineering departments. Corhart, a subsidiary of Corning Glass, makes Electrocast refractories for glassmaking furnaces and special refractories for the steel industry. Corning produces conventional glass tank refractories and special high temperature refractories, including Glascast mold materials for precision metal casting. J. Donald Pisula has been appointed manager of refractory marketing for the consolidated staff.



VACATIONS

Chase Brass & Copper Co. announces the following schedule for the vacation closing of its own and affiliated plants: Waterbury, Conn., mill, including Forging Div., July 7 to July 21; Cleveland mills, July 21 to Aug. 4; and Kennecott Wire & Cable Co. plant, Phillipsdale, R. I., June 30 to July 14. Branch warehouses and sales offices will be open for shipments from warehouse stocks during plant shutdowns. Shipments can also be made from mill stocks at Waterbury and Cleveland.

Greer Steel Co. will close its plants at Dover, Ohio, and Anderson, Ind., from June 28 through July 13. No shipments will be made and no goods received during this period. Partial service will be maintained at the firm's general office.

ASSOCIATIONS

American Iron & Steel Institute, New York, re-elected these officers: President, Benjamin F. Fairless; executive vice president, Max D. Howell; vice president, William M. Akin; vice president, Arthur B. Homer; secretary, George S. Rose; treasurer, E. O. Sommer Jr.; assistant vice president, C. M. Parker; and assistant secretary, F. A. Coombs.

Magnesium Association, New York, elected these officers who will be installed at the annual convention in Detroit Oct. 16-17: President, Otis E. Grant, Magnode Products Inc., Trenton, Ohio; vice president, Charles A. Howe, Hills-McCanna Co., Chicago; vice president, John Thomson, Dominion Magnesium Ltd., Toronto, Ont.; treasurer, N. G. Gzowski, Garfield Alloys Inc., Cleveland.

Herbert C. Golz, general manager, Elgin Metalformers Corp., Elgin, Ill., has been appointed by the **Electronic Industries Association** to organize a study of universally accepted standards for racks, panels, and enclosures.

National Association of Architectural Metal Manufacturers, Chicago, elected these officers: President, P. C. Crawford, Wooster Products Inc., Wooster, Ohio; secretary, W. A. Boesche, Ornamental Iron Work Co., Akron, Ohio; and treasurer, R. S. Woodbridge, Woodbridge Ornamental Iron Co., Chicago. Vice presidents of NAAMM and presidents of the various divisions are: J. T. Edwards Jr., J. T. Edwards Co., Columbus, Ohio, Iron & Steel Div.; S. M. Olson, C. W. Olson Mfg. Co., Minneapolis, Nonferrous Div.; Ralph L. McKenzie, Flour City Ornamental Iron Co., Minneapolis, Metal Curtain Wall Div.; J. J. Marcin, Spanjer Bros. Inc., Chicago, Tablet & Letter Div.

R. G. Follis, Standard Oil Co. of California, San Francisco, was re-elected chairman of the **National Industrial Conference Board,** New York. Charles M. White, Republic Steel Corp., Cleveland, was elected chairman of the trustees.

NEW ADDRESSES

Pipe Fabricating & Supply Co. moved to 9703 S. Norwalk Blvd., Santa Fe Springs, Calif. John M. Eagle is general manager.

Scott Equipment Co. and its affiliate, **Scott Material Handling Co.,** moved to enlarged quarters at 272 Leo St., Dayton, Ohio.

Beltraco Inc. moved to 925 Grand Ave., Kansas City 6, Mo. The company is agent for S. A. Eteco-Trefileries Leon Bekaert Zwevegem, Belgium (steel wire).

Royco Instruments Inc. moved to larger quarters at 874 Fabian Way, Palo Alto, Calif. Roy Gustavson is president.

Pullman-Standard Car Mfg. Co. moved its executive offices to 200 S. Michigan Ave., Chicago 4, Ill.

Headquarters of **Clevite Harris Products Inc.** are being moved from Cleveland to the company's plant in Milan, Ohio. Clevite Harris, a subsidiary of Clevite Corp., compounds and molds rubber parts which are assembled into rubber-and-metal parts for automotive and other uses in the company's plant at Napoleon, Ohio.

CONSOLIDATIONS

Hagan Chemicals & Controls Inc., Pittsburgh, acquired the name and tangible assets of **Kybernetes Corp.,** New York, maker of automatic data logging and temperature monitoring equipment. Production will continue at Kybernetes' present plant, but eventually will be transferred to Hagan's instruments and controls plant in Orrville, Ohio.

Illinois Tool Works, Chicago, acquired **Pacific Solenoids Inc.,** El Segundo, Calif.

Merger of **Standard Fire Brick Co.,** Pueblo, Colo., into **A. P. Green Fire Brick Co.,** Mexico, Mo., became effective May 1. John MacFarlane is general manager of the Standard Div.

Stauffer Chemical Co., New York, acquired **Anderson Chemical Co.,** Weston, Mich., and will operate the property as a subsidiary. Amos R. Anderson continues as president, and Harold G. Deters, secretary and director of sales.

NEW PLANTS

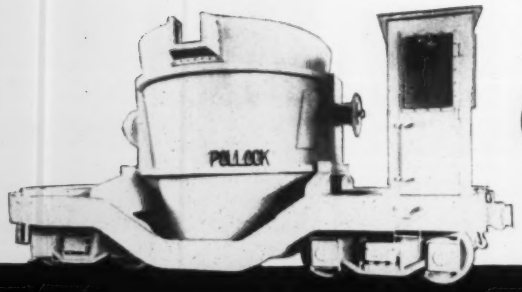
Circle Wire & Cable Corp., Maspeth, N. Y., placed in operation its new electrical metallic tubing plant at Hicksville, N. Y. The $2,250,000 plant has a capacity of 80 million ft of tubing a year. This is sufficient to meet over 17 per cent of the nation's annual requirements for electrical metallic tubing. Circle Wire is a wholly owned subsidiary of Cerro de Pasco Corp., New York.

Production of safety switches has begun at **Cutler-Hammer Inc.'s** $4-million plant at Lincoln, Ill. Additional production lines to manufacture low voltage distribution equipment are scheduled to begin operations in the months immediately ahead.

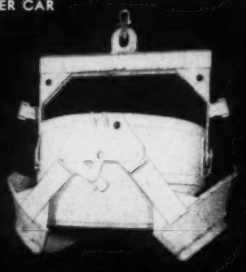
Ellstrom Inc. opened its new plant facilities at 32330 Ford Rd., Garden City (Detroit), Mich. The firm builds air and air-electric gaging fixtures, instruments, machine control systems, and special machinery.

POLLOCK

Open hearth handling equipment

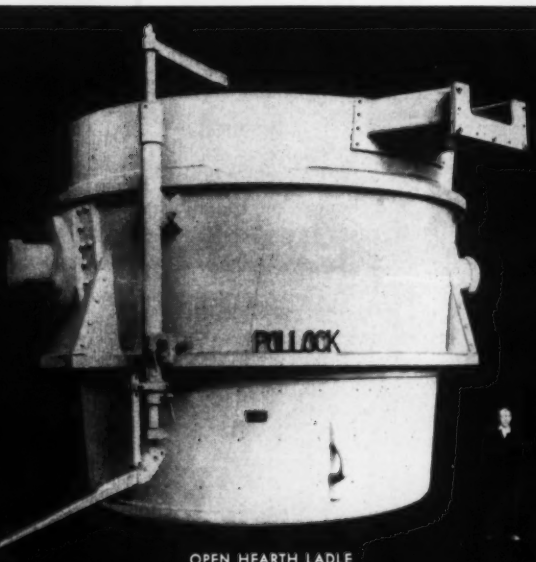


HOT METAL TRANSFER CAR

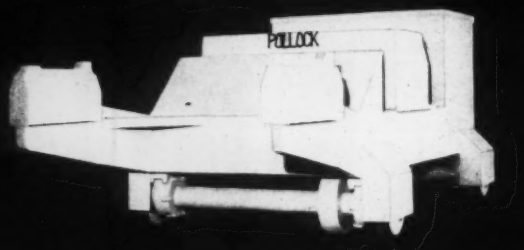


ELECTRIC FURNACE CHARGING BUCKET

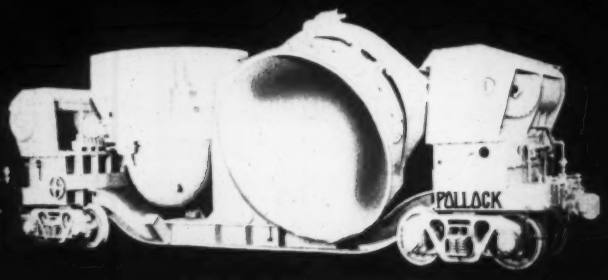
INGOT CAR



OPEN HEARTH LADLE



FRONT-FLUSH SLAG CAR



DOUBLE POT SLAG CAR — AIR DUMPED

an Important factor in increased production

Efficient handling of molten and heavy materials within open hearth plants requires equipment with three characteristics—safety, strength and durability. Pollock equipment meets these necessities. The William B. Pollock Company, in 94 years of operation, has also built more blast furnace handling equipment than any other firm.

When you plan a new open hearth, remodel an existing open hearth or re-equip an open hearth, take advantage of the experience available to you at Pollock. General specifications are available on request. Special-performance details will be engineered to your specifications. Pollock engineers will work closely with your engineers to give you the equipment that meets your needs best.

POLLOCK
SINCE 1863

THE WILLIAM B. POLLOCK COMPANY
YOUNGSTOWN, OHIO

STEEL PLATE CONSTRUCTION • ENGINEERS • FABRICATORS • ERECTORS

BLAST FURNACES • HOT METAL CARS AND LADLES • CINDER AND SLAG CARS • INGOT MOULD CARS • CHARGING BOX CARS • WELDED OPEN HEARTH LADLES

STEEL
June 2, 1958

Technical Outlook

SHOCK HARDENING—Explosives do a better hardening job than the best cold rolling, says Cyril S. Smith, Institute for Basic Research, University of Chicago. Samples of metal exposed to shocks of 9 million psi were harder than cold-rolled metal which had been reduced 95 per cent. The most amazing effect: No change in the metal's dimensions. Other results: Twinning of copper crystals at room temperature, and the possibility that metal hardness may be a yardstick of explosion pressure.

RED HOT LUBRICANTS—Wright Air Development Center, Dayton, Ohio, lists several synthetics showing great promise as bases for 700° F lubricants and hydraulic fluids. Among them are derivatives of ferrocenes (cyclopentadienyl metals) and several mixed symmetrical tetraalkylsilanes.

CHEAPER REACTORS— Aluminum clad fuel elements will mean substantial savings if an experimental alloy (X-8001) proves out, says Dr. J. E. Draley, Argonne National Laboratory, Lemont, Ill. The alloy contains small amounts of nickel in aluminum 1100, a formula which contains some iron. The chief drawback of previous aluminums has been poor corrosion resistance in boiling water.

SPRAYING BEARING METAL—A German inventor discloses that metal sprayed in layers makes an excellent bearing. Backing is dipped into solder after being heated to 350° F, then sprayed with copper, white metal, or similar bearing material. When cool, the bearing is machined.

HARD TREATMENT—Under certain electrical conditions, you can transfer hard material from an electrode to a workpiece, says a British firm. Called spark hardening, the method produces a lot of tiny, shallow craters and gives treated surfaces a satin-like appearance. Photomicrographs show that the craters are lined with hard metal and that the hardening effect penetrates deep into the subsurface. Workpieces are ground, cleaned, and mounted in a fixture. A spark electrode moves across the surface — discharge is controlled to produce heavy, medium, or fine finishes. Only areas of heaviest wear are treated.

THIN FOIL— Hamilton Watch Co. rolls zirconium and titanium down to 0.0001 in. at its Lancaster, Pa., plant. The firm's Sendzimir mills get close control through beta ray gages. (The zirconium foil is used in flash bulbs.)

SKINS OFF EXCESS WEIGHT—Numerically controlled skin and profile mills saved 20 lb on skin panels of the B52G bomber, says the Air Materiel Command, Wright-Patterson Air Force Base, Dayton, Ohio. For example, the two lower wing skin panels made by numerically controlled tools weigh less than 959 lb. The same panels machined on a tracer spar mill average 20 lb heavier—in some cases they weigh 990 lb.

AUTOMATED CHEM MILLING— The process has grown up at Convair's Pomona, Calif., plant to the point where it is largely conveyorized and rates a special name, "Dynamic Etching." Batch processing can also be accomplished on the mass production facility.

TRACTION PACK—Eimco Ltd., a British firm, makes what it calls a "crawler base." It's a flat platform mounted over crawler treads. Powerplant, transmission, and hydraulic gear are mounted under the platform between the treads. It was developed for mining uses (like towing) and as a base for equipment such as drills or cranes. It would appear that this only scratches its potential.

ANOTHER REDUCTION METHOD—This time it's Inland Steel which will build a direct reduction pilot plant. The plant, at the Indiana Harbor Works, will test a method developed in the company's research laboratories. Details will not be available until patents have been issued.

Metalworking Outlook—Page 29 Market Outlook—Page 103

THE JOB: Produce follower cams for tracer controlled milling machines.

OLD METHOD		NEW METHOD	
Tracer controlled milling machine		**Numerical controlled milling machine**	
Time	11.9 manhours	Time	4.65 manhours
Labor Cost	$72.40	Labor Cost	$29.60
Machine Cost	42.40	Machine Cost	28.50
Material Cost	5.95	Material Cost (Savings come from elimination of need for template)	4.48
TOTAL COST . . $120.75 per cam		**TOTAL COST . . . . . $62.58 per cam**	

COST CRISIS . . . How To Beat It

Numerical Control Cuts Cost 48%

Aircraft company added it to a production machine and saved $34,900 in two months. It's turning out cams that are used to guide other milling machines

SHORTER manufacturing time, beefed up shop potential, less rework due to human error, and the release of qualified personnel for other work—those are advantages of numerical control cited by engineers at Lockheed Aircraft Corp., Marietta, Ga.

They are using a milling machine (converted from tracer control) to turn out templates for another contouring machine. In two months, the tape-guided machine turned out 600 cams for $34,900 less than it would have cost with the tracer approach—and the machine was loaded only to about 50 per cent of capacity.

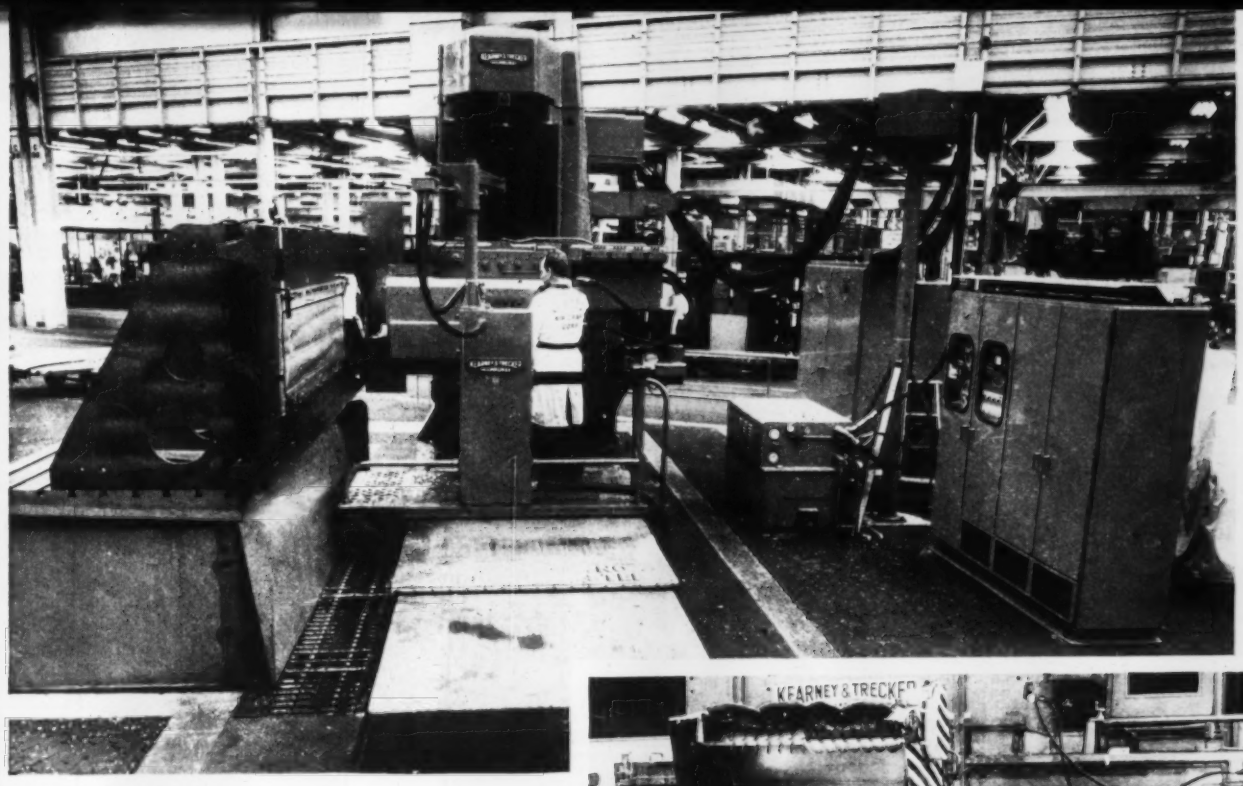
Sequence — To set up the machine, a tooling technician prepares a manuscript, defining part geometry, cutter size, feed rates, sequence of cuts, and other auxiliary functions.

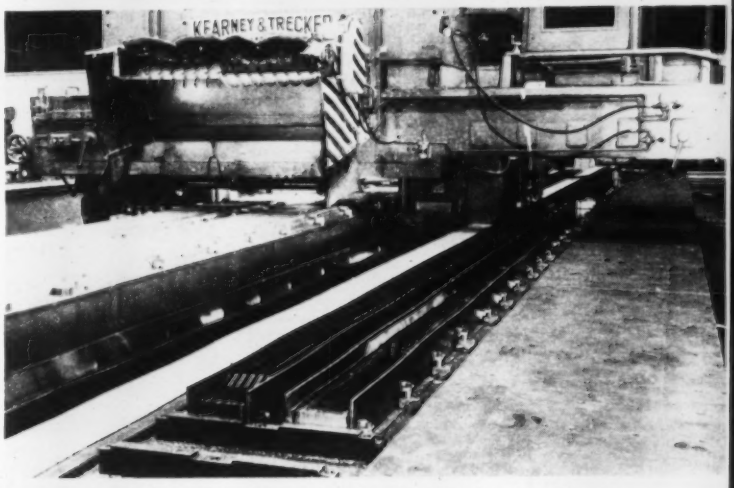
When the manuscript is complete, the information is arranged in proper sequence and put on IBM cards.

After the cards are checked for accuracy on a verifier, they go into a tabulator that reads them and automatically prints the information as a final check. From there, the cards go to the IBM-704 computer that interprets the data, makes the necessary computations, and punches a set of control cards. Control cards go to a converter that puts the data on a punched plastic control tape.

At the machine, the control tape is mounted on a photoelectric reader in the control unit built by the Controls Section, Bendix Aviation Corp., Detroit.

The operator sets the spindle speed and cutter location on the control console. When he pushes





SAVED:
$58.17
per part

An operator watches as the tape control unit (top photo) guides the machine through its paces. The long cams (bottom photo) guide this milling machine in its contouring of aircraft skins. The cams are made on the numerically controlled machine

the tape control button on the console, the Kearney & Trecker mill begins to trace the pattern of the follower cam.

Nearly all machine setup is done away from the production area (the exception—putting the tape in the control console). The machine is shut down only a few minutes between jobs. Another advantage: Once a control tape for a cam is set, it is a record of the shape and is always ready for immediate use.

The Purchase — Manufacturing engineers at Lockheed closely calculated the benefits of numerical control before the purchase. Armed with these figures, they convinced management that the approach would help lick the cost crisis.

COST CRISIS COMPETITION

This article is part of a campaign to help industry achieve lower unit production costs. The accompanying example and others to follow are samples of what the editors of STEEL are looking for in their nationwide search for companies that have brought about important cost savings through more efficient use of capital equipment. Does your company qualify? If so, enter the Cost Crisis Competition. Write to the Cost Crisis Editor, STEEL, Penton Bldg., Cleveland 13, Ohio, for your awards kit.

THE JOB

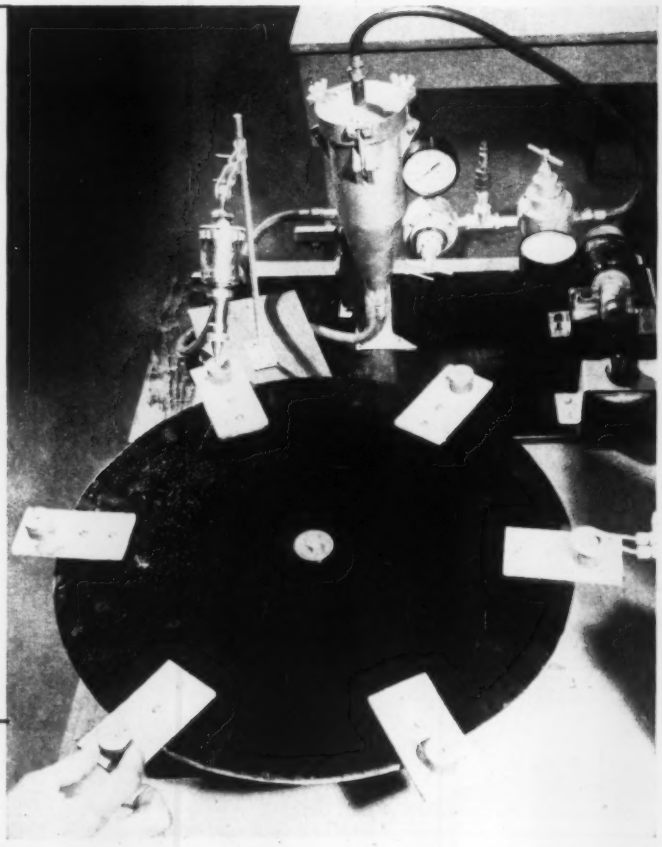
Soldering Magnet Assemblies

Material saving . . .
40 per cent

Production increase . . .
30 per cent

Labor saving . . .
$8000 a year

Equipment cost . . .
$500



Test setup for soldering caps to speaker magnets. Placed in fixtures on a rotary table, the parts index under the paste solder dispenser and then under an induction heating coil

Paste Solders Automate Assembly

Drastic reductions in cost and increases in production can be realized. Outlay for equipment is low. Needed: Paste solders, dispensing equipment, heat source

DON'T overlook automatic soldering in your campaign to lower costs and increase production. It's an investment that can bring real returns.

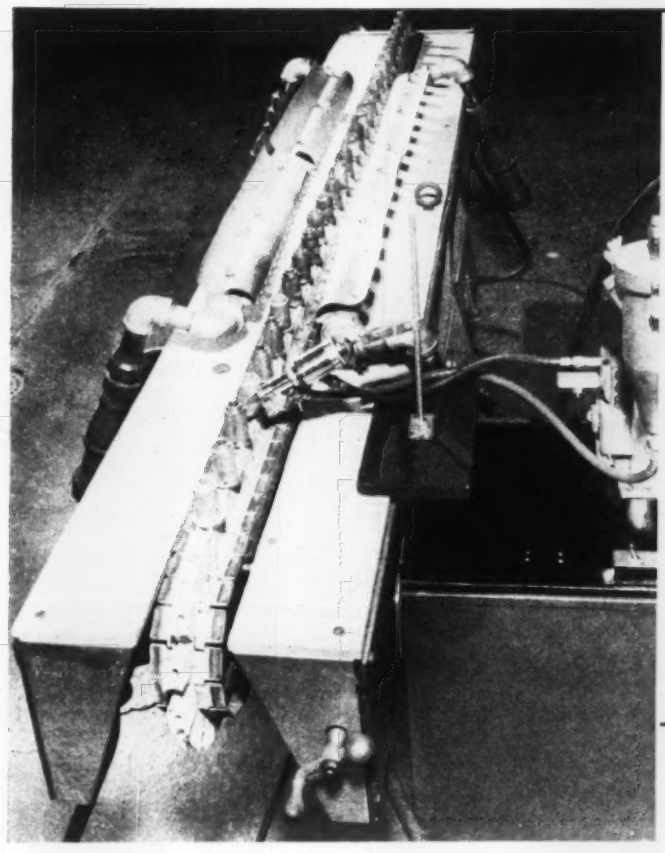
An electronic firm soldering caps on speaker magnets spent $500 on equipment to automate the process and saved $8000 a year on labor alone. Another fabricator, who brazes brass hubs to body assemblies for outboard motor engines, saved $14,000 a year when he put in automatic equipment at a cost of $310.

In both cases, paste compounds and automatic dispensers were used. The equipment was installed by Fusion Engineering Co., Cleveland. The firm has other equally successful applications in industries making auto parts, metal cans, plumbing fixtures, carbon brush assemblies, and instruments.

Paste Metered to Parts—In the Fusion process, the solder paste (it contains solder powders blended with fluxes, cleaners, and binders) is metered to the parts on a production line. The parts then pass through a heat source (induction, gas, electric, or infrared) and the soldering is completed.

The process eliminates many of the objections of hand soldering. Skilled operators are not required; in some cases, only maintenance personnel are needed. Soldered joints are uniform, since the same amount of solder, flux, and heat are applied each time. Rejects are practically eliminated.

Assemblies may be soldered as



THE JOB

Brazing Motor Assemblies

Material saving . . .
7 per cent

Labor saving . . .
$10,500 a year

Total saving . . .
$14,000 a year

Equipment cost . . .
$310

Test setup for brazing brass hubs to body assemblies for outboard motor engines. Paste silver brazing alloy and dispenser are keyed into a gas brazing machine

rapidly as three a second. In many production operations, a single automatic soldering line has replaced several hand soldering lines which were required to keep up production rates. In other cases, by automating the present setup, production has been increased without increasing facilities.

In the Fusion paste dispensing units, air pressure forces solder through small orifices. Valves meter the amount within 0.01 ounce. The size of the deposit can be controlled from extremely small dots to large drops and stripes.

The dispensers also can be hand operated. In some cases, simple brush or transfer methods have proved satisfactory.

Wide Range of Solders — Paste solders are available in any standard composition, from low melting, high bismuth alloys to high melting lead-silver solders.

Standard and special silver brazing alloys are made in paste form for automatic brazing operations. The alloys can be combined with any type fluxing agent to meet the job requirement.

Magnet Assemblies Handled— In soldering caps to Alnico V magnets, the parts are placed in fixtures on a rotary table. The table indexes under the paste dispenser nozzle and then under an induction heating coil.

Before automating the process, the company used two skilled men to deposit slugs of solder and drops of liquid flux, using tweezers and eye droppers. It was hard to control the size of the solder slugs and many of the assemblies had to be cleaned of excess solder before plating.

Automating the process saved the company $8000 a year in labor, not counting the cost of cutting the solder slugs and reworking reject parts. Material consumption was cut 40 per cent and production increased 30 per cent. Equipment cost was $500. The electronic manufacturer has since installed similar equipment to solder magnet assemblies to speaker yokes.

Motor Assemblies, Too — Silver brazing brass hubs to body assemblies for outboard motor engines was done by fluxing and locating preformed silver alloy rings over the hub assemblies. Three operators were required to keep up with the gas brazing machine.

Using a standard paste silver brazing alloy and a dispenser keyed into the gas brazing machine resulted in a labor saving of $10,500 a year.

Material costs were decreased 7 per cent; spot inspection replaced 100 per cent inspection; and rejects were practically eliminated. Total savings using the paste method were more than $14,000 a year. The equipment cost $310.

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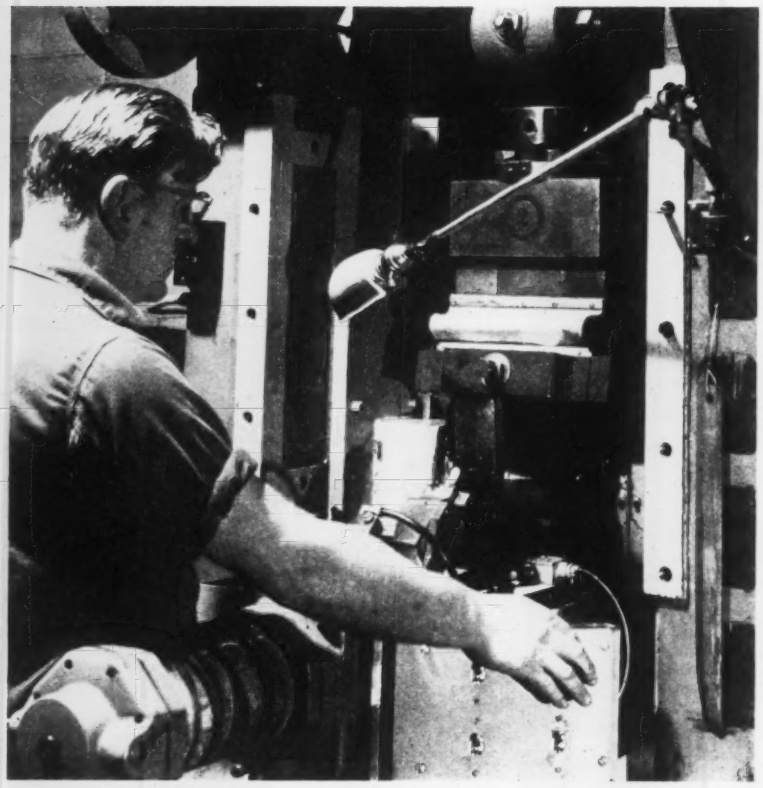


The operator sits in front of a 95-ton mechanical press that's adapted for pinch and roll forming turbine blades. Mockup at right shows how the blade is formed in the roll zone. The process requires only simple fixturing and a standard press

Roll Forming Gets an Assist

Squeezing the part just prior to rolling whips turbine blade problem for this manufacturer. Expected savings: About one-half the usual cost of blades

ENGINEERS at General Electric Co. expect to turn out small gas turbine blades at half the cost of conventional production methods. They'll do it with a new roll forming technique that both pinches and rolls the blade contour.

"This means we can probably cut $2000 off the cost of our T-58 engine, the small gas turbine that's being readied for helicopter application," says Ted Ferren, supervisor of manufacturing engineering specialists at GE's Small Aircraft Engine Dept., Lynn, Mass. His group developed the process.

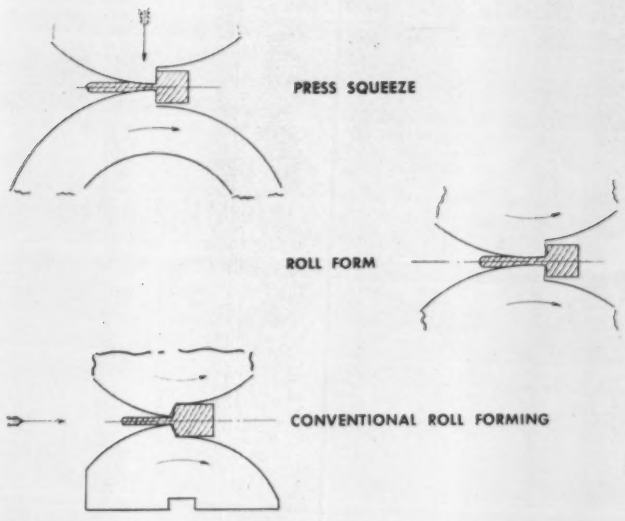
The Problem—Some of the blades are extremely small. One group measures only 0.570 in. from root to tip. The airfoil is 0.020 to 0.036 in. thick up the middle, dwindling to as little as 0.006 in. thick at the trailing edge.

Coupled with this diminutive airfoil is a relatively wide base or platform — roughly $\frac{3}{8}$ by $\frac{1}{2}$ in. This blade-base ratio makes it almost impossible to shape the parts by conventional roll forming. The lead required for feeding parts into rolls with fixed center distance precludes roll contact at the root. (See drawings at top of Page 71.) It frequently has resulted in scuffing or crowding of metal at the root.

The Answer — William Paille, Gene Belli, and Frank Fowler, all of Mr. Ferren's department came up with the new process. It combines the advantages of roll forming (see STEEL, July 8, 1957, p. 97) with a touch of press forging. It puts a squeeze at the blade root before the rolling starts.

The process is turning out blades that require no finishing machining. Tolerances of at least 0.010 in. can be held on all dimensions, and on specific locations the process is holding to ± 0.0015 in. The engineers explain that the tolerances are directly related to the precision of the tooling.

How It Works



Upper drawings show how blade is first squeezed by the press action, then rolled to form the foil section. The bottom drawing points up the problem of controlled forming at the foil root with conventional rolling techniques

How It's Done—Standard 95-ton mechanical presses have been adapted for the pinch and roll operations. The extruded and preformed blank is put in a pneumatic holder that travels on a carrier.

The carrier moves the part into the radial groove in the lower roll, butting the base of the part against the leading edge of the roll segment. As the press ram lowers, it brings the upper roll down against the part, putting a squeeze at the root. Here the press cycle is halted, and a hydraulic cylinder at the rear of the press goes into operation, rotating the rolls to form the part. The carrier is under slight hydraulic tension, drawing the part out of the rolls.

The cycles for the press, rear hydraulic cylinder, and front hydraulic cylinder that draws the carrier all are tied together. The only basic change on the press was to alter the cycle so it would dwell at half cycle, while the rolls are turned. The two rolls are linked to the rear cylinder through a toggle pin that accommodates the slightly different roll speeds caused by the concave and convex diameter difference.

Sequence—To get the small blades for the T-58, GE production men (now using the setup at the Ludlow, Vt., plant) start by cutting slugs from 403 stainless bars. (See photo at bottom of this page.) Next the slugs are heated to about 2000° F and extruded—then reheated to 2000 and press preformed.

After the flash from the first operation is trimmed, the parts go to roll forming. The size of the blade being worked determines the number of passes made. A typical cycle gives each blade three or four rolls, with anneal and hardness checks between.

The foil is finished by coining it on a 300-ton press and giving it a final trim.

Finally, the foil section is cast in a matrix fixture and the base is broached. All blades are vapor blasted and Magnaflux inspected.

Production—So far, the pinch and roll form sequence is running pilot fashion at Ludlow. The engineers are confident that the process lends itself to automation, where parts are heated, formed, rolled, and finished in an automatic (or nearly automatic) production line.

Quality of the finished blades indicates that the sequence is nearly trouble-free from a capability standpoint. Tests show that all the metal moved during rolling advances lengthwise along the blade. There's no tendency for the metal to spread sidewise.

The precision of the tooling controls precision in the parts, and the only structural defects in the blades are those that were in the bar stock.

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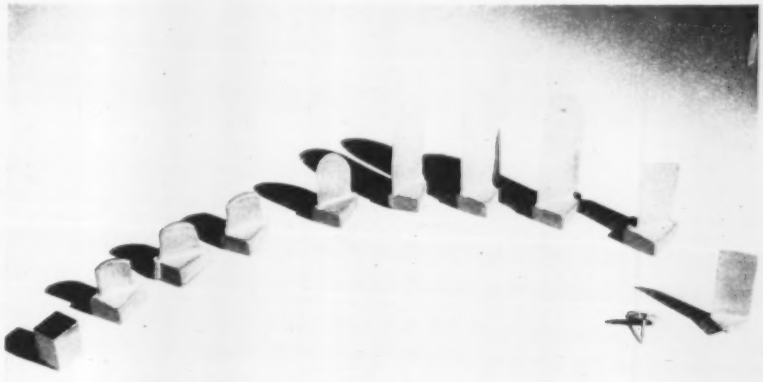
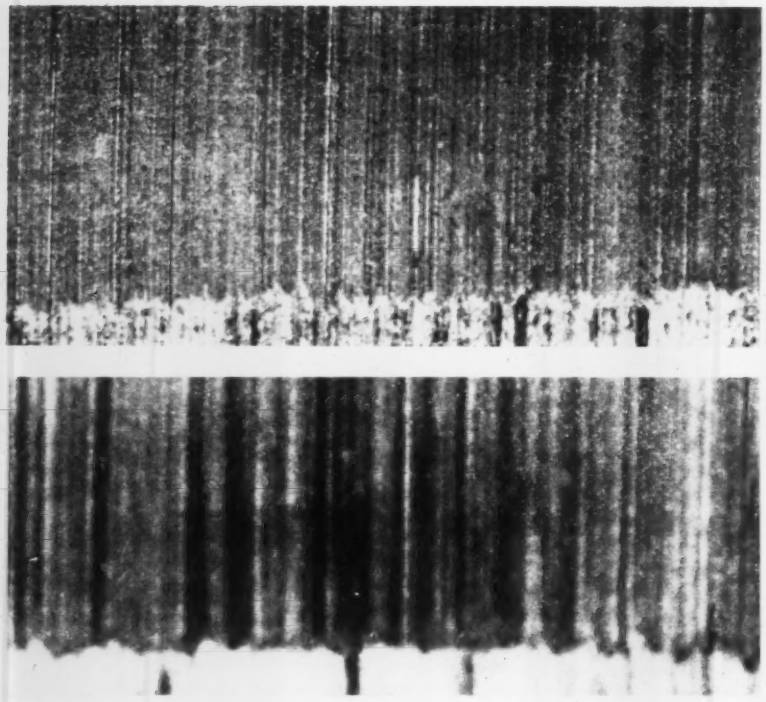


Here's the sequence of shapes from the blank at left to the finished blade at right. It covers: Slug cutoff, extrude (at 2000° F), preform (at 2000° F), trim the flash, first roll, second roll, third roll, coin, finish trim, and broach the base



These photomicrographs compare surface quality of electrolytic cut (top) and regular cut of diamond wheel. Electrolytic action "floats" metal away

Fine Grind Cuts Tool Costs

Electrolytic method ups quality. Sharper tools help operators make precision parts more easily. Method is said to reduce grinding problems of tungsten carbide, titanium

ELECTROLYTIC grinding cut tool maintenance time more than one-third at Ryan Aeronautical Co., San Diego, Calif.

Side benefits include ten times longer wheel life (saving $5000 a year) and longer tool life. Machine operators don't tire as quickly, and they pay more attention to precision.

Need—Ryan makes a large number of parts for hot aircraft from hard-to-machine metals. The work calls for high precision tool grinding. It put in an Anocut Electrolytic Grinding system to meet requirements.

Ryan engineers converted a Hammond grinder for the system. (The machine was about to be replaced.) They simply fitted nylon insulated bearings on the spindle.

How It Works—Anocut is an application of electroplating with an important difference: Metal being removed from the anode (the part being ground) is not deposited on the cathode (the grinding wheel). Diamond particles, embedded in the face of a steel wheel, are insulated and prevent metal buildup.

An electrolytic fluid flows between the tool and wheel. A high amperage, low voltage current dissolves or "deplates" the tool. Automatic controls regulate current density.

Trained grinder operators have been able to run the electrolytic unit with only a few minutes of instruction. Grinding is done electrically, so no pressure is exerted. Since the unit was installed, no tools have been rejected.

Second Unit—Ryan has ordered a new grinder to resharpen throw-away carbide tool bits. Such inserts are normally used only once because they are difficult to resharpen. The firm estimates the grinding can be done for about one-eighth the replacement cost.

Reasoning—Ryan feels that the electrolytic method considerably reduces machining problems of tungsten carbide, titanium, and special alloy steels. Since the process is cold, work is free of spot annealing and work hardening. Finishes are smooth and free of scratches.

Analyses Speeded

Swiss spectrometer gives fast readings on carbon, sulfur, and phosphorus at Stelco

SEVEN-MINUTE analysis of carbon, phosphorus, and sulfur by spectrochemical methods is now the rule at Steel Co. of Canada Ltd., Hamilton, Ont. Such speedy readings on these key steelmaking elements have previously been out of the question.

The instrument which makes it possible is a direct reading, optical emission, vacuum spectrometer developed in Switzerland. It adds a second dimension to steel mill spectrometers which have been widely adopted for fast analysis of other elements, such as manganese, silicon, copper, nickel, chromium, molybdenum, and tin.

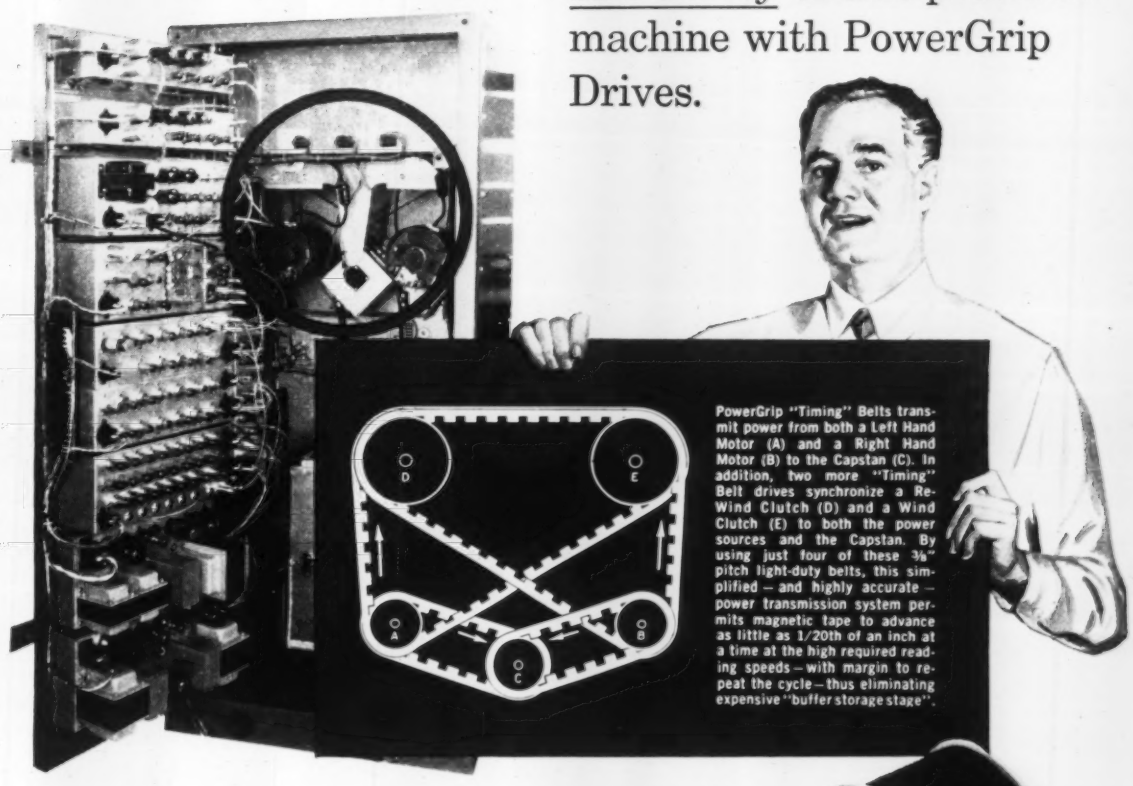
Fast Action—The $100,000 instrument is housed in a new $1.5-million metallurgical and chemical laboratory at Stelco's Hamilton Works. Pneumatic tubes speed steel samples from the furnaces directly to the laboratory.

In the spectrometer, the sample serves as one electrode. The second electrode is pure silver or graphite. The sample is evaporated in an argon atmosphere.

Resolution of the spectral lines of carbon, phosphorus, and sulfur is accomplished by a $2000 electronic tube.

US RUBBER **POWERGRIP** "TIMING" BELTS

"GRIP" POWERS tells how they improved the sale-ability of this precision machine with PowerGrip Drives.



PowerGrip "Timing" Belts transmit power from both a Left Hand Motor (A) and a Right Hand Motor (B) to the Capstan (C). In addition, two more "Timing" Belt drives synchronize a Re-Wind Clutch (D) and a Wind Clutch (E) to both the power sources and the Capstan. By using just four of these 3/8" pitch light-duty belts, this simplified – and highly accurate – power transmission system permits magnetic tape to advance as little as 1/20th of an inch at a time at the high required reading speeds – with margin to repeat the cycle – thus eliminating expensive "buffer storage stage".

The Shepard Servo Transport Digital Tape Reader, shown here, is used to match the speed of electronic information being fed from high-speed data processing machines to the speed of the apparatus which transcribes the electrical impulses into readable typewritten copy.

By incorporating PowerGrip "Timing"® Belt drives into this system, the following sales advantages were gained:

- *no maintenance problems*... no lubrication, no take up or other special alignment required; drives will last for the life of the machine.
- *vibration-free transmission*... belts run smoothly and quietly with constant angular velocity.
- *handles high shock loads*... slippage and belt friction eliminated; steel cables imbedded in the belt provide high tensile strength.
- *lower cost*... PowerGrip costs ½ as much as previous drive; saving is passed to the customer.

Says E.J. Quinby, Product Manager: "We use these belts because exhaustive research by us has proven them superior in speed–accuracy–reliability – durability – silence – freedom from periodic adjustment."

Check the *sales advantages* PowerGrip "Timing" Belts can add to your designs.

• • •

When you think of rubber, think of your "U. S." Distributor. He's your best on-the-spot source of technical aid, quick delivery and quality industrial rubber products.

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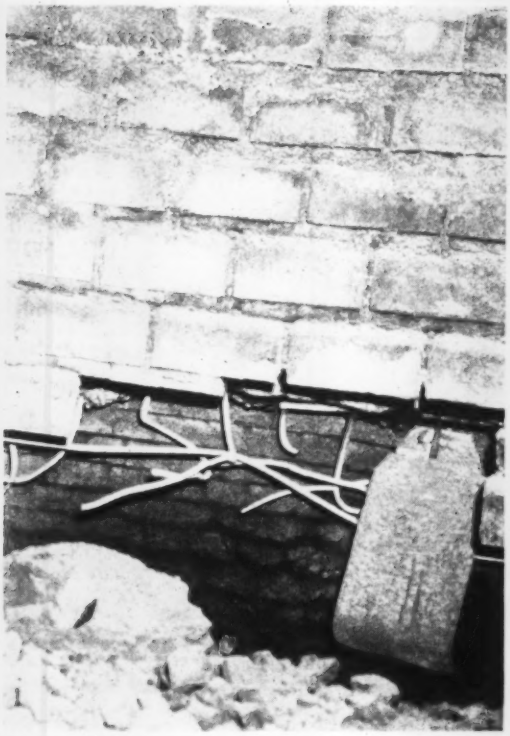
United States Rubber

Rockefeller Center, New York 20, N. Y. In Canada: Dominion Rubber Company, Ltd.

A crate and box house the camera as it is lowered into the big bell of the blast furnace



Damaged stock line armor shows clearly in this picture taken while the banked furnace was still hot

Camera Checks Furnace Linings

Photographs taken while banked blast furnaces were still at 200° F showed that one needed relining. Operating time was saved by checking the furnaces before they were shut down

PROBING the interior of a hot blast furnace with a camera can pay off several ways, says Colorado Fuel & Iron Corp., Pueblo, Colo. Loss of operating time is prevented; photographs provide a record of furnace interiors; and the hazardous job of lowering workers inside the furnace is eliminated.

Case History—The company had two furnaces due for relining; each had produced more than 1.2 million tons of iron since they were relined. After they were banked, John Monson, blast furnace superintendent, asked plant photographers to take pictures showing the condition of the stock line armor beneath the big bell section.

Before taking the pictures, the photographers checked the drawings of the furnaces to get their inside diameter and height of burden. They found that pictures had to be taken at depths ranging from 8 to 40 ft.

How It Was Done—An old 4 x 5 in. Baca fitted with a 4.7 Speed Graphic lens with built-in syncronization was used. It was placed in a container to protect it from dust.

The camera was lowered into the furnace with a set focus of 15 ft, a lens opening of *f*. 11, and a shutter speed of 100. The shutter was triggered when the camera stopped swinging. The camera was hauled out and reloaded after each picture was taken.

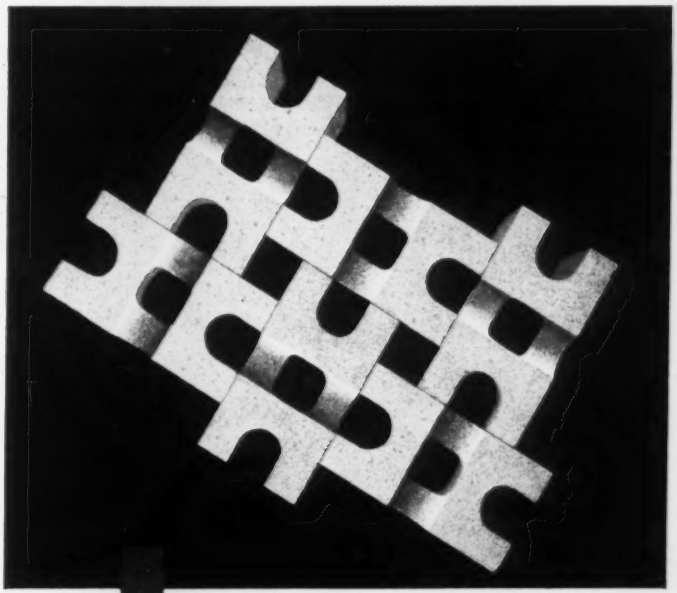
A 40-ft extension cord was used. Voltage drop along the cord caused a delay in the synchronization system, and the plates were not exposed on the first attempt.

Findings—The pictures did not indicate lining thickness, but they showed where bricks were missing. The erosion in one furnace was so bad it was immediately relined.

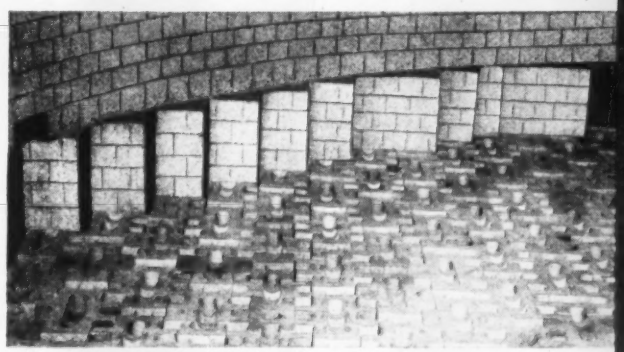
New design provides

25% to 50% GREATER HEATING SURFACE

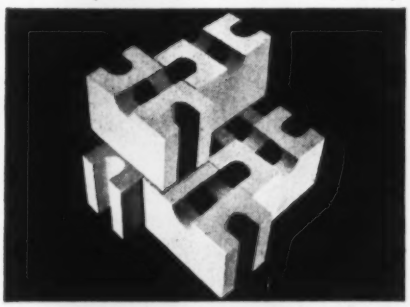
than ordinary basket weave checkers



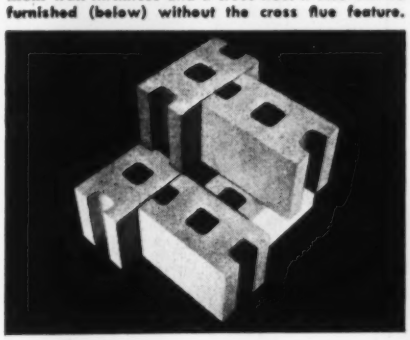
KENNEDY BLAST FURNACE STOVE CHECKERS



Tendency of checkers to twist in service is overcome by pilaster wall construction of the Bailey Hot Blast Stove.



The regular Kennedy Checker (above) is of 3-hole design with unobstructed flue openings, 1¼" minimum wall thickness and a cross flue. It also can be furnished (below) without the cross flue feature.



This new 3-hole checker shape is laid in basket weave style to produce a solid 1¼" wall between each flue. This assures greatly increased heating surface without sacrificing the advantages of basket weave design.

The increased heating surface of the Kennedy Checker results in a correspondingly lower stack temperature. This makes possible the use of a modern steel bottom for supporting the checker system.

Write for Bulletin

WILLIAM M. **Bailey** COMPANY

ENGINEERS

LEADERSHIP THROUGH QUALITY

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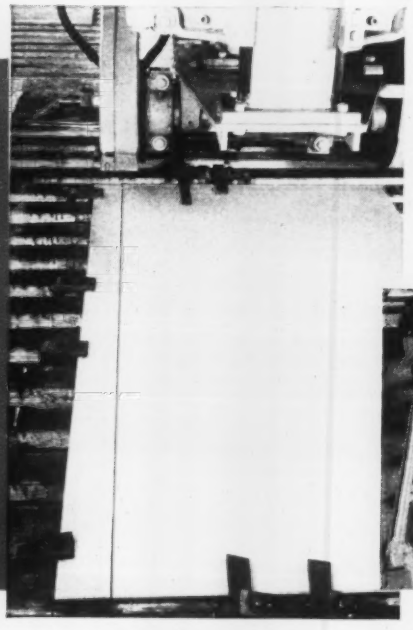
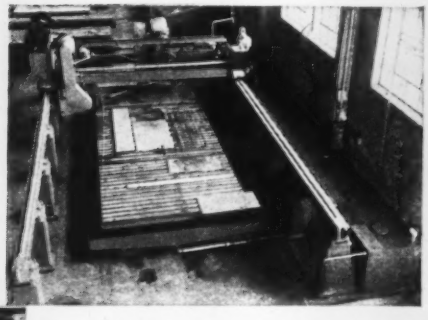
DILEMMA with a HAPPY Ending!

Ross Metal Shapes, Inc., Chicago milling specialists, were faced with an out-of-the-ordinary procurement problem. They had to have bars of special width and of a type of stainless normally carried *only* in plate. Moreover, the bars had to be of close tolerance.

Consulted about this problem, the CSS sales engineer serving the account, immediately recognized it as a job that could be handled *only* on our new Ty-Sa-Man saw. From our complete warehouse stocks, it was a simple matter to select the plate of the exact analysis required, and then cut it to specified dimension within prescribed tolerances. Delivery was made quickly. The customer had exactly what he needed—and in plenty of time to meet his tight schedule.

New TY-SA-MAN Saw at The HOUSE OF STAINLESS Proves "Life-Saver" in Meeting Customer's Unusual Requirement





Our sole purpose in pointing up this experience is to show what lengths "The House of Stainless" is equipped to go in helping CSS customers get the exact stainless steel needed—whether it's a special like this or routine items. Our wide experience, complete warehouse stocks, and modern equipment are always at your service on *both* stainless and carbon steel. And where direct mill shipments of stainless are called for, we will secure them for you from the leading producers—at no additional cost to you.

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Electroless Plating

A chemical process for depositing nickel, it has some advantages over electroplating

IF your product specs call for a nickel plate, you may be able to do a better job with electroless plating.

A chemical deposition process for plating nickel and cobalt on metal surfaces, the technique was developed a decade ago by the National Bureau of Standards. It is similar to electroplating but does not employ an electric current. A number of industries are using the process.

Advantages — Electroless plating can be used to build up smooth, uniform coatings to a definite thickness over irregularly shaped objects without producing nodular deposits on edges and corners.

The nickel coating is deposited only on certain catalytic metals, such as iron, nickel, cobalt, and palladium. By periodically replenishing the bath, the system can be run continuously for hours or days.

Since the reaction is autocatalytic (the nickel itself catalyzes the process), the deposition continues after a nickel surface is obtained on any object. Noncatalytic metals can be made catalytic by immersion in a dilute solution of palladium chloride. It coats the metal surface with an almost invisible film of catalytic palladium.

Contains Phosphorus—Electroless nickel deposits contain about 8 per cent phosphorus. The deposits are bright and hard.

The electroless process involves the reduction of hot nickel salt solutions, such as the chloride or sulfate, with pure sodium hypophosphite. An organic acid, such as glycolic or citric, is added to the bath as a combined buffering and complexing agent. The reaction utilizes only about one-third of the hypophosphite reducing power because a concurrent reaction between hypophosphite and water produces hydrogen and phosphite.

Effect of Acidity — Experiments by the bureau indicate that acid content has a drastic effect on the rate of deposition. Example: A decrease in the pH of the bath from 5 to 4 halves the deposition rate.

The optimum pH of the electroless bath is limited at the lower level by the decrease in the rate of nickel deposition and at the higher level by the diminishing solubility of nickel phosphite. The most satisfactory pH for the acid bath seems to be between 4 and 4.5.

Test Results—Plated steels have been tested outdoors to compare the protective value of electroless nickel deposits (from acid and alkaline baths) with that of electrodeposited nickel and nickel-phosphorus alloys.

Electroless nickel coatings from acid baths give greater protection against rusting than electrodeposited coatings. Although somewhat tarnished, the electroless plates had only a few rust spots at the end of 15 months, while the electrodeposited nickel of the same thickness and under the same conditions rusted considerably.

The protective value of the electroless nickel deposits is equivalent to that of the electrodeposited alloys which contain about 9 per cent phosphorus.

Transportation of engines on these pallets requires no shoring

Steel Pallets Save Time

INTERPLANT transportation of combine engines was a twofold problem at the John Deere Harvester Works, Moline, Ill. It took a lot of time to secure engines to truck beds with lumber at the Dubuque, Iowa, plant, and it took a lot of time to unload them at the Moline plant.

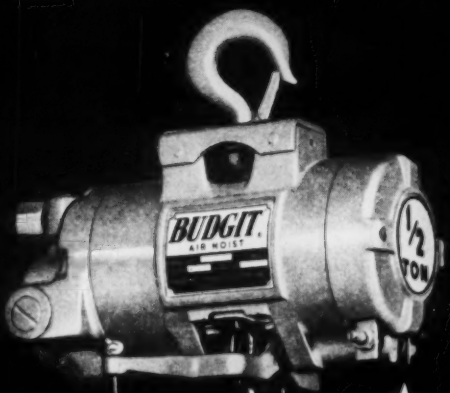
Savings—Steel pallets with bolt-down holes solved the problem. It used to take 8 hours to shore up 48 engines (10 minutes per engine); now the same job is done in 1 hour 36 minutes (2 minutes per engine). Unloading used to take 3½ minutes per engine, vs. 30 seconds now.

The 43 x 63 in. pallets are 9 gage corrugated steel, have four-way entry, and can be stacked three high with full load. Steel pallets were chosen because they require little maintenance, retain the bolt hole spacing, and have a life expectancy of 30 years.

Method — Made by the Pressed Steel Div., Republic Steel Corp., Cleveland, each pallet has 16 threaded holes to accomodate bolts for four engines.

Threading is provided by winged nuts welded to the underside of the pallet which are spaced to a tolerance of 1/32 in.

Something NEW is in the air...



SAFETY-PLUS FROM HOOK TO HOOK

EFFICIENT EQUA-TORQUE GEARING

VARIABLE SPEED CONTROL

MOTOR CAN'T BURN OUT

INSTANT-ACTION AUTOMATIC BRAKE

COMPACT AND LIGHT

ROLLER CHAIN, IF YOU PREFER

MUFFLER QUIETS EXHAUST

FEWER MOVING PARTS

SPARK AND CORROSION RESISTANT MODELS

'BUDGIT' AIR HOISTS

Capacities:	500 lbs.	1000 lbs.	2000 lbs.
Speed FPM:	0-75	0-40	0-20
Weight:	27 lbs.	27 lbs.	40 lbs.

Lift: 10 Feet, Standard. Operating Pressure: 80 psi.

Service stations from coast to coast save time, trouble and money for every 'Budgit' user.

...'BUDGIT' AIR HOISTS

New air hoists handle tough production lifting jobs safely and quickly wherever atmospheric conditions are hazardous, corrosive, extremely hot, dirty or wet. Soon pay for themselves, then continue saving for years to come.

Built into 'Budgit' Air Hoists are fine quality and operational advantages comparable to those long associated with 'Budgit' Chain Blocks and Electric Hoists. Many features unique in air hoist design insure safe, trouble-free performance in the worst conditions of service imaginable.

Variable speed control puts precision accuracy into spotting loads. You merely manipulate the handles on the control cords to get instant lifting or lowering action from creep to top speed.

Far quieter operation. The only air hoist with a muffler to mute exhaust noise that tires workers.

Compact and light. Much lighter than most other air hoists. Special aluminum alloy frame and housing combine lightness with rugged strength.

Fewer moving parts, plus accurate machining, assure long life for the heavy-duty vane-type motor without costly maintenance.

Safe to use anywhere. Explosion-proof motor is ideal for use where atmosphere is hazardous. Motor won't burn out – overloads can't damage it.

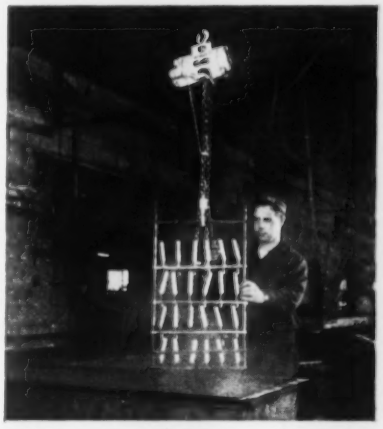
Automatic load brake is shoe-type. Acts instantly when air pressure to motor is cut off – holds the load safely. Easily adjusted externally.

Finest gearing made. Highest efficiency Equa-Torque spur-gearing distributes the load on two sets of teeth in each gear for extra safety. Heat-treated machine cut teeth mesh accurately, wear longer. Operation is smooth on ball or roller bearings.

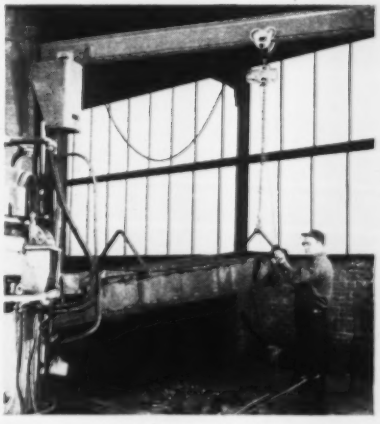
Tough load chain with safety hooks. Nickel steel *roller* chain will not stretch or bind. Heat-treated alloy steel *link* type chain especially tough for severe hoisting service. Forged steel safety hooks swivel freely through 360° – securely lock hoist and load in center of hook saddles.

Free demonstration. Phone your nearby 'Budgit' Hoist distributor today. Ask him to demonstrate the many functional and money-saving advantages of the 'Budgit' Air Hoist. Just pick the spot where he can hang the hoist and connect to your 80 psi air. If you want complete printed information first, write us for Bulletin 15010-24.

'BUDGIT' AIR HOISTS



'BUDGIT' AIR HOISTS



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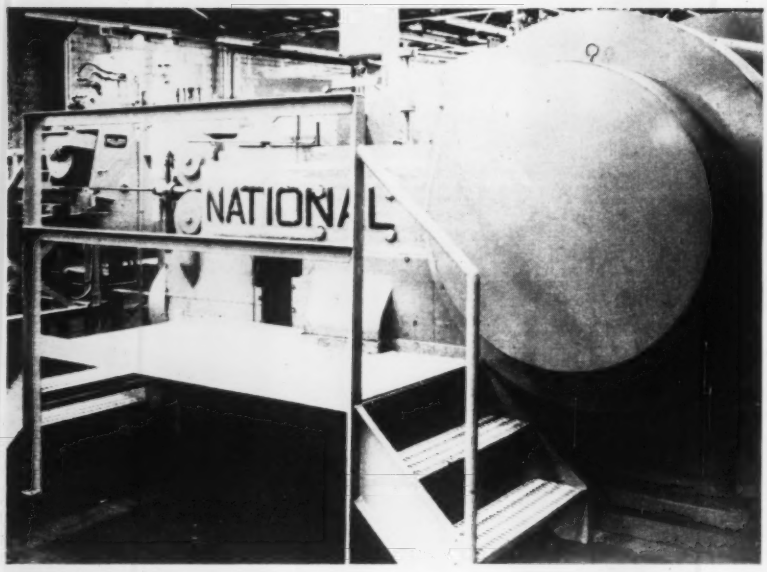
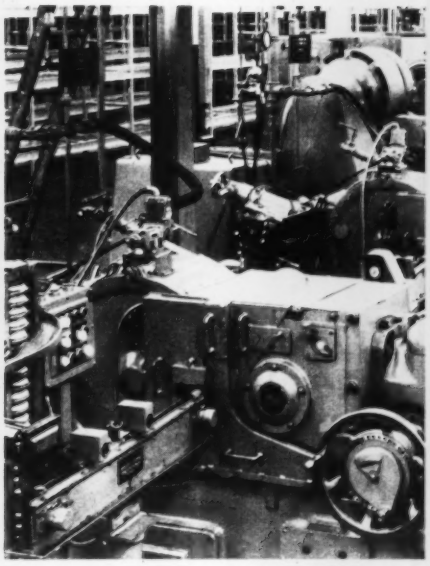
In Canada: Manning, Maxwell & Moore of Canada, Ltd., Galt, Ontario

Builders of "Shaw-Box" and 'Load Lifter' Cranes, 'Budgit' and 'Load Lifter' Hoists and other lifting specialties.



Header machine turns out an accurately formed roller every second



Roller grinding line. Six operations

Bearing Line Needs Few Operators

Mechanization of machining operations, heat treat, and grinding lines keep manual handling at a minimum. In-process gaging assures high level of quality

IN PLANNING its new $7,150,000 railroad bearing plant in Columbus, Ohio, Timken Roller Bearing Co. faced a problem common to every manufacturer: How to build a plant to turn out products at a price that would be attractive to its customers.

The solution Timken came up with: A highly mechanized plant using the latest in automatic machines, mechanical handling systems, and in-process gaging.

Based on a three-shift operation, 26 men per shift can turn out 20,000 car sets a year. (There are eight bearings per car.) That's about one-sixth the manpower required by former methods.

Worker Investment Is High—The high degree of mechanization keeps the investment per operator high. In the automatic heat treat line, where Timken has $2,142,000 worth of equipment and five men, each man becomes responsible for $428,400 worth of equipment.

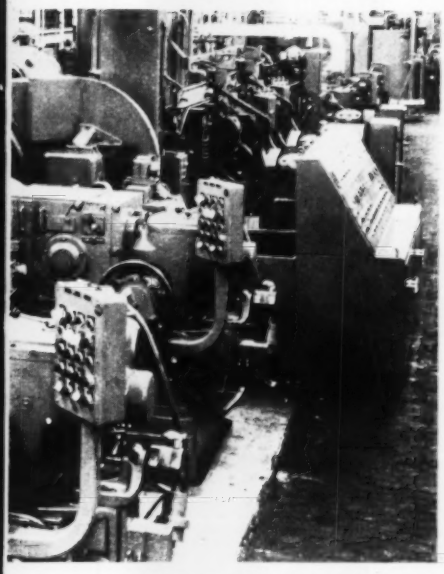
Final inspection and assembly, which requires nine men, brings the average investment per operator down to $165,000.

Material Stored Near Lines—The hot-rolled, seamless tubing from which the bearing cups and cones (outer and inner races) are machined is received and stored in a lot between the two buildings that house the production facilities. A month's supply of tubing can be maintained at the tube storage area.

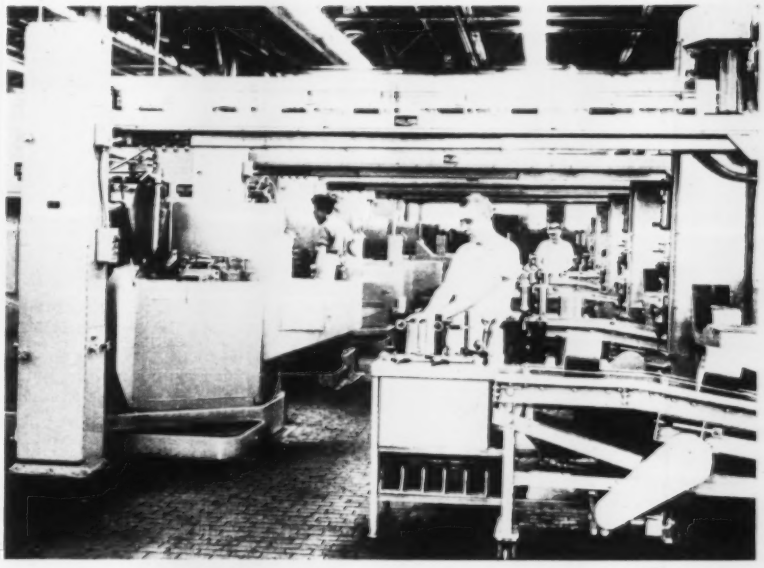
The tubing is a carburizing steel containing 3.5 per cent nickel, 1.5 per cent chrome, and 0.12 per cent carbon. It's stocked in sizes from 6 to 10 in. OD and 8 to 20 ft long.

Adequate storage of raw and semifinished material has been provided throughout the production line. Timken has a potential market for roller bearings on new railroad cars of about 100,000 car sets a year. Also, there is a possible replacement market of some 2 million freight cars now operating on friction bearings. Storage within the lines eliminates a shutdown of the entire line to make adjustments on one machine.

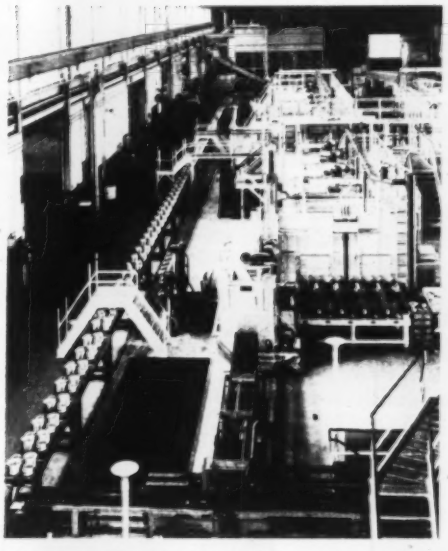
Cup and Cone Machining—The green machining operation is fully automated; three men per shift handle the five, 10⅝ in., single spindle automatic screw machines;



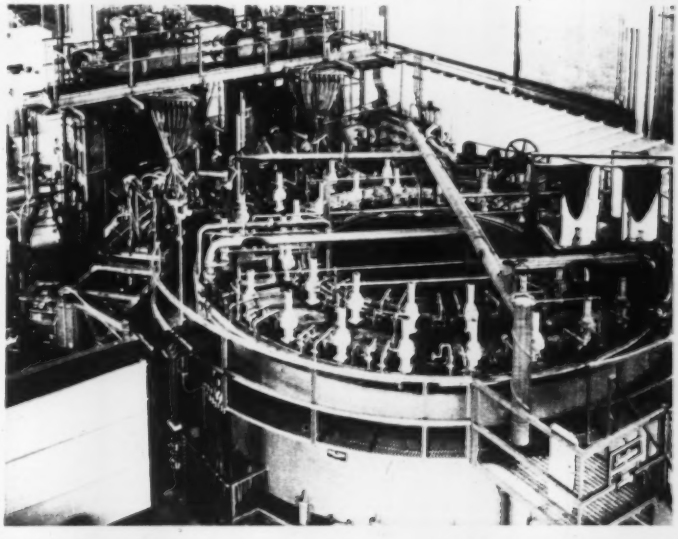
are needed to finish all surfaces



Cup and cone machining. Screw machines at left rough turn races from seamless tubes. Machined pieces pass overhead on a conveyor to chucking machines (right) for finish machining



Heat treat department. High temperature draw furnace is in foreground; two carburizing furnaces are in back. Conveyor at left takes machined parts to the carburizing furnaces



Rotary hardening furnace that follows carburizing and tempering units. Quench presses are at top left

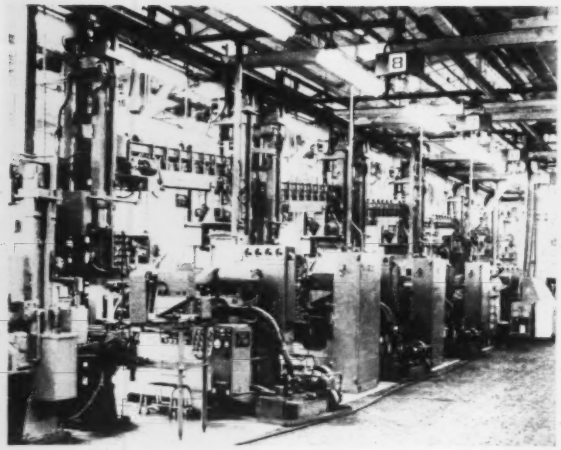
five, 12 in. chuckers; washing machine; and two marking units.

Workmen load tubing on the storage racks of the screw machines (enough for an 8-hour shift) which rough machine the cups and cones. The parts are transferred automatically to the battery of chucking machines for finish machining. Conveyors carry the pieces through the washer and die marking machines.

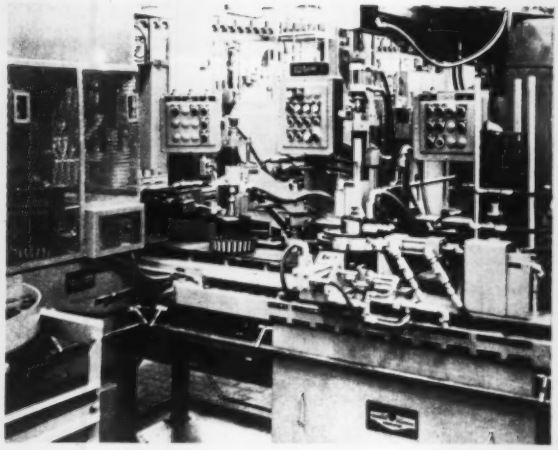
Preset tungsten carbide tooling is used throughout the machining operations. It makes possible cutting speeds of 465 to 475 sfpm. National Acme Co., Cleveland, built the machines and transfer mechanisms to Timken's specifications.

Heat Treat Is Automatic—A system of conveyors and transfer mechanisms takes the machined cups and cones through one of the two carburizing furnaces, high temperature draw furnace, reheat furnace, press quench, and low temperature draw furnace.

Parts coming off the heat treat line have carburized cases 0.45 to 0.50 in. deep. Carbon concentration



Cup grinding line. Eight operations are required. Automatic handling system carries cups from one machine to next. Cones are ground on a similar line in six operations



Cone assembly machine. It places roller in the cages, checks that all rollers are in place, puts the cone inside the rollers, closes in the assembly in less than a minute

in the case is 0.95 per cent. Case hardness is 58 to 62 Rc; core hardness is 35 to 45 Rc.

All heat treating is done in endothermic gas atmospheres. Natural gas is added in the carburizing furnaces. Bearings come out of the final temper free of scale.

Operators load two cups and four cones on special furnace trays. Conveyors take the trays into one of the two carburizing furnaces where the temperature is maintained at 1700° F. The cycle for one tray of parts is 23 hours. The capacity of each furnace is 145 trays or 290 bearing sets. After carburizing, parts are quenched for 3 minutes in 125° F oil.

Transferred to the drawing furnace, the parts are tempered at 1100° F for 6½ hours. Capacity of the furnace is 80 trays of bearing sets. Quench time is 1½ minutes in 125° F oil.

Reheat for hardening is done in a rotary indexing furnace. Temperature is held constant at 1450° F. Cycle time is 1.6 hours. The furnace has 44 positions and indexes 39 times between loading and unloading. Trays are discharged every 2.4 minutes. Feeder heads pick up the hot cups and cones and place them in fixtures in a quenching press where they are quenched in moving oil.

Final heat treatment is a low temperature draw to equalize hardness and relieve quenching stresses.

All equipment in the heat treating installation, including furnaces, presses, and handling equipment was built by Surface Combustion Corp., Toledo, Ohio.

Cup and Cone Grinding — To keep the six operators who man the cup and cone grinding lines fully informed on the condition of the machines, Timken installed a system of colored lights over the machines. Green tells the operator the machine is running; yellow means it is waiting, but in operating condition; red means it is stopped and requires attention. A monitor panel in front of the line gives the same information in greater detail.

All the grinders are equipped with gages which provide in-process control at each operation. Gages are provided at each station for a quality check by roving inspectors.

Eight operations are required to finish grind the cups; six operations are required on the cones. A conveyor system transfers and positions parts between operations. The conveyor provides a 30-minute storage of parts between operations. Washing stations in the bottom of each conveyor elevator clean and cool the cups after each grinding operation.

Production of Rollers — A 1-in. National header machine turns out accurately tapered rollers at the rate of one a second. Each time the header indexes, a piece is sheared from stock and cold formed into shape.

In the roller grinding line (it takes six operations), the rollers are kept in sequence throughout the grinding and inspection operations. It insures that all rollers in a bearing will be as uniform as possible.

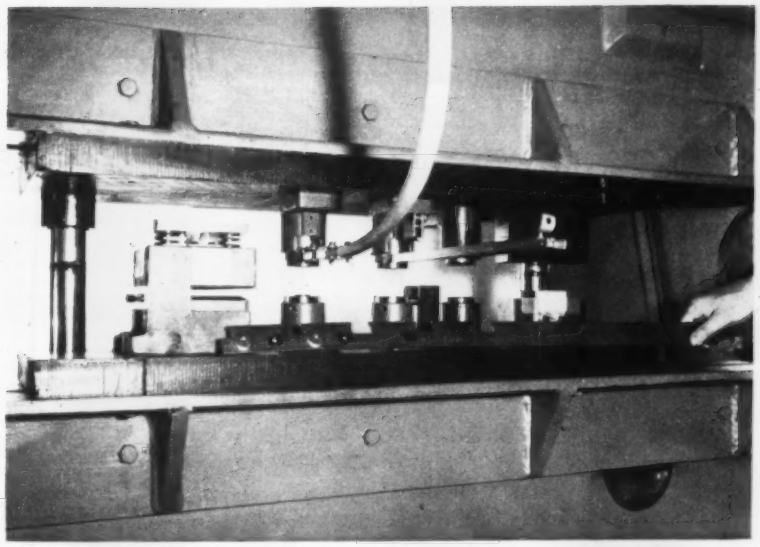
Inspection and Assembly—Final operations include inspection of parts for visual defects and gaging operations to insure accuracy. Cups and cones are conveyed through an automatic phosphating operation to give them a protective coating.

Cones, rollers, and cages are brought together, automatically assembled, and cages closed to make a self-contained unit. The units are conveyed to a battery of machines where they are run in under load.

In final assembly, cups and cones are assembled into a finished bearing and lubricated.

Bearing Capacity Tripled—The Columbus production line has boosted Timken's railroad bearing capacity about 300 per cent. There is space available within the buildings that house the lines to set up additional equipment.

Timken's plant is a continuation of a development program that has been going on for more than 30 years. The firm has had to sell the idea of roller freight to create the demand that would justify the outlay of capital necessary for a highly mechanized plant.



Strippit unit is hopper fed through plastic chute—to its right is the magazine fed type. Work piece is being held in front of die adapted to a press brake

Boost for Assembly

Device that works on any kind of press extends scope of automatic fastener process used chiefly by automakers. It eliminates several steps in assembly

A MASS PRODUCTION process that eliminates assembly operations is now available for short runs when multiple thread fastening is required. The method combines a fastener that pierces its own hole and a device which inserts and secures it in a single stroke of a standard press. Embossing can be done at the same time.

Up to now, the auto industry has been the chief user of the Fabri-Steel Pierce Nut and the Multi-Pierce Process. On-the-shelf die sets (called the Strippit Pierce Nut Unit) extend the scope of the process to any kind of press.

Examples—Several companies are already using it on short runs: Lennox Industries Inc., Columbus, Ohio, is using it in the production of heat exchangers (16 and 18 gage). Frigidaire Div., General Motors Corp., Dayton, Ohio, is using it to make a complete assembly (mounting bracket) for automatic washers. E. F. Hauserman Co., Cleveland, is using it in the fabrication of office partitions and doors.

Particulars — Single or multiple dies may be used, and the process may be combined with other operations, such as blanking or forming. When several units are operated, fasteners may be fed automatically from a spring loaded magazine or from a multiple line hopper. Automatic sizing allows the use of low cost fasteners.

Standard press production of up to 10,000 assemblies an hour and 100,000 a day is possible. The Pierce Nut has a work hardened surface of more than 100 Rockwell B, enabling it to penetrate sheet metal 0.025 to 0.125 in. thick.

Arrangement — Multifastener Corp., Detroit, licenses the Pierce Nut for manufacture to FabriSteel Products Inc., Detroit. Distribution will be made through Wales-Strippit Co., Akron, N. Y., which will manufacture the Strippit Pierce Nut Unit.

New! Multi-Service Grease with Extreme-Pressure qualities

Mobilplex EP

FEWEST POSSIBLE GREASES

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- Preferred for water resistance

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- Simplifies purchasing
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Turn page for additional reasons why

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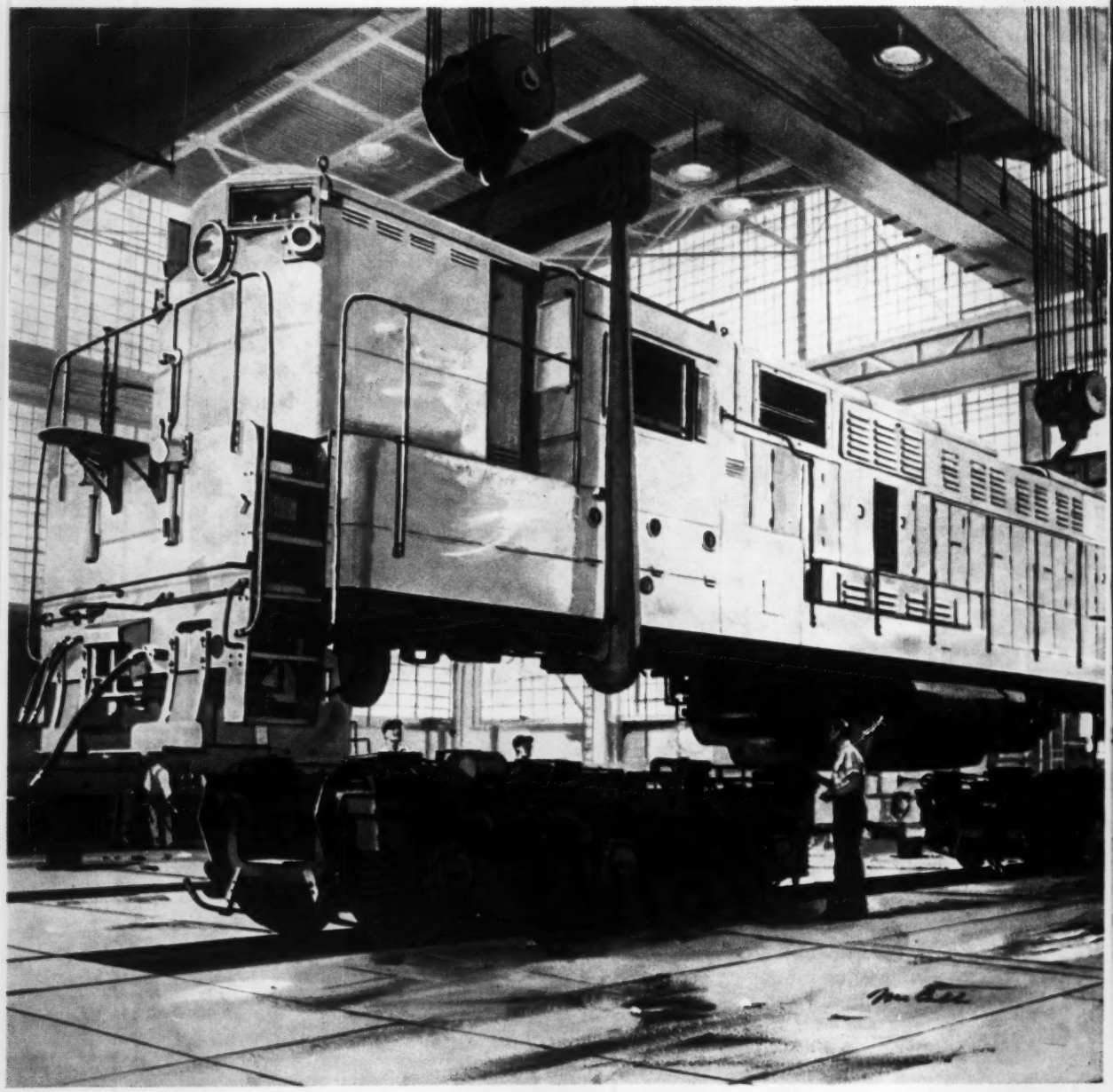
Maintenance cost cut



Mobil

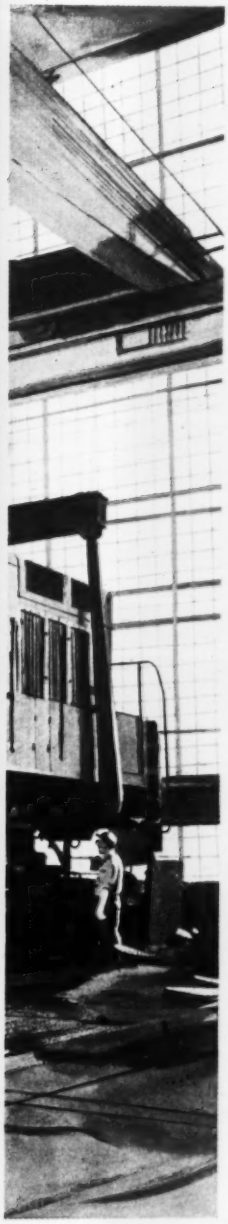
Complete Engineering Program
Proved Petroleum Products

Mobil

SOCONY MOBIL OIL CO., INC., and Affiliates: MAGNOLIA PETROLEUM CO., GENERAL PETROLEUM CORP., MOBIL OVERSEAS OIL CO., INC.

Heavy Equipment Industry!

$58,500 in one year!



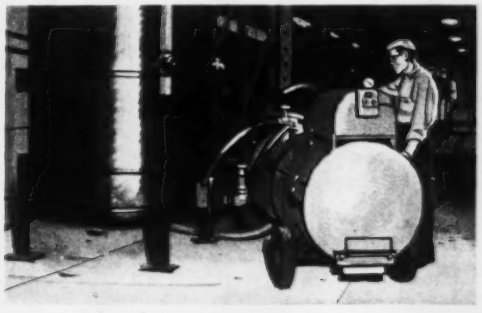
One of the many maintenance and production savings achieved by Fairbanks, Morse & Company with the help of Socony Mobil

In 1949, Fairbanks, Morse & Co. installed a Mobil Program of Correct Lubrication. This decision has continually paid off, as it can for you, by directly contributing to company profits.

To illustrate: First year after installation of a Mobil Program in the company's Beloit, Wisconsin plant figures showed machine repair maintenance costs were reduced 26.3 percent . . . $58,500. In fact, plant supervisors and Mobil engineers have co-operated so effectively under this service that today . . . nine years later . . . the Program shows continuing benefits, with the result that machine repair maintenance costs are now 49 percent lower than when the Program was inaugurated.

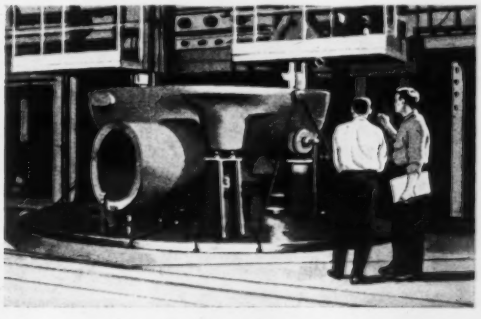
In dollars, this saving yearly is in excess of *twice the cost of plant lubricating oil requirements.* Here is another example of how Correct Lubrication in action can reduce maintenance costs and *increase profits.* It proved effective for this leading builder of heavy equipment. Why not for you?

In-plant training conducted by Mobil specialists demonstrates proper lubricant application and maintenance procedures . . . teaches Fairbanks, Morse personnel to recognize and prevent trouble before it results in downtime, repair costs.



Disposal of thousands of gallons of water-soluble cutting oils posed serious, expensive problem. Mobil recommendation of chemical separation process allowed disposal through plant sewage system . . . avoided stream pollution, saved substantial sum.

Control system cuts downtime:—Mobil lubrication charts cover plant's 2,300 machines . . . specify correct lubricants, lubrication periods . . . assure follow-through on application and maintenance.



High temperatures of Boring Mill way lubricant lowered viscosity . . . resulted in pressure drop, causing machine to stop. Mobil recommendation solved problem, allowed continuous operation.

Correct Lubrication

Another reason You're Miles Ahead with Mobil!

BREAKFAST CEREAL

bulk-transported by AMERICAN MONORAIL

Electric power unit drives 4 hopper cars, each with 350 lbs. capacity. Product travels from 2 load-weigh stations to 2 packaging lines.

How costs were cut . . .

A leading manufacturer of food products has cut costs by transporting unit loads of bulk breakfast cereal with American Monorail. Ten Monorail trains with 4 hopper cars per train operate near the ceiling. This reduces floor traffic, increases plant safety, and the product is kept clean and free from contamination.

A Monorail system can be installed at your plant that will improve your work flow, increase usable floor space, and reduce your handling costs.

Send NOW for free literature.

AMERICAN MONORAIL

ENGINEERED MATERIALS HANDLING

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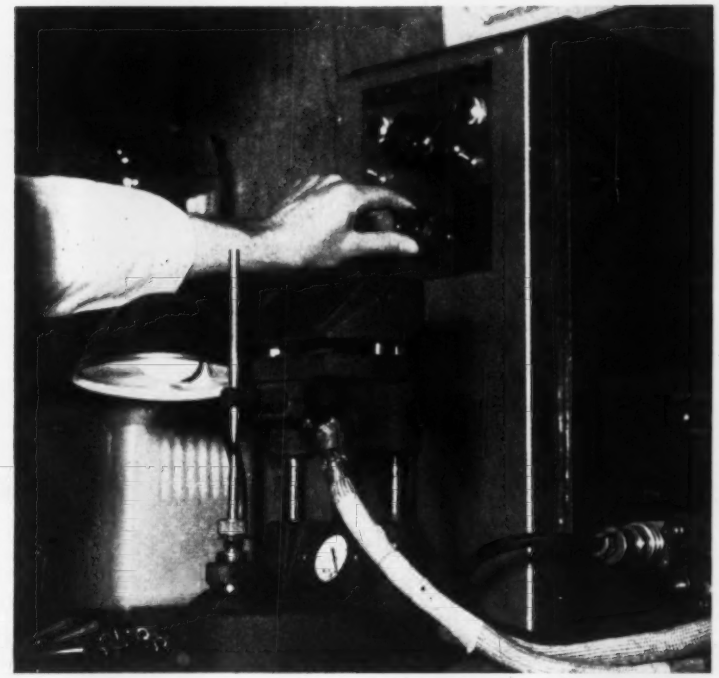
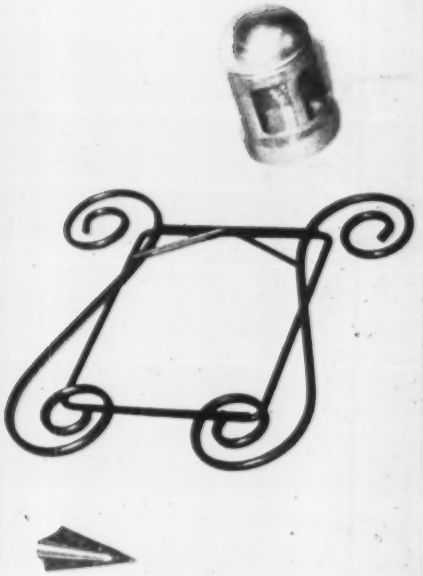
CLEVELAND 7, OHIO

OVERHEAD HANDLING EQUIPMENT

MEMBER OF MATERIAL HANDLING INSTITUTE AND MONORAIL MANUFACTURERS ASSOCIATION





In spite of its smallness, Pacific Welding's resistance machine can be controlled more precisely than some of its larger cousins, designers say. Typical products shown at right

Midget Spotwelder Packs Wallop

Ordinary household electricity supplies power to weld thin pieces. It joins practically all similar and dissimilar metals. Firm uses method on thick joints to avoid deformation

STORED ENERGY is the secret behind a new welding machine that joins fine wires and foils.

Such materials are easily overheated and cannot be welded with standard equipment. Pacific Welding Co., Los Angeles, says that the parts can be fused more satisfactorily than they can be soldered.

Low Power—The machine operates on regular 115 volt, 60 cycle, single phase current and draws a maximum of 8 amperes. Stored energy (electricity) is released more rapidly than it's stored.

Compared with other new units, the spotwelder is relatively simple and inexpensive. Raytheon Mfg. Co., Waltham, Mass., is the maker.

Operation—The welder rectifies and transforms electrical current so that the energy can be stored for intermittent use. Secondary current at the electrode tips may have a high peak (up to about 10,000 amperes), but it is completely discharged in 0.0030 to 0.0166 second as each spotweld is made.

It can be controlled with precision for a variety of applications and can fuse without burning or disintegrating many similar and dissimilar metals.

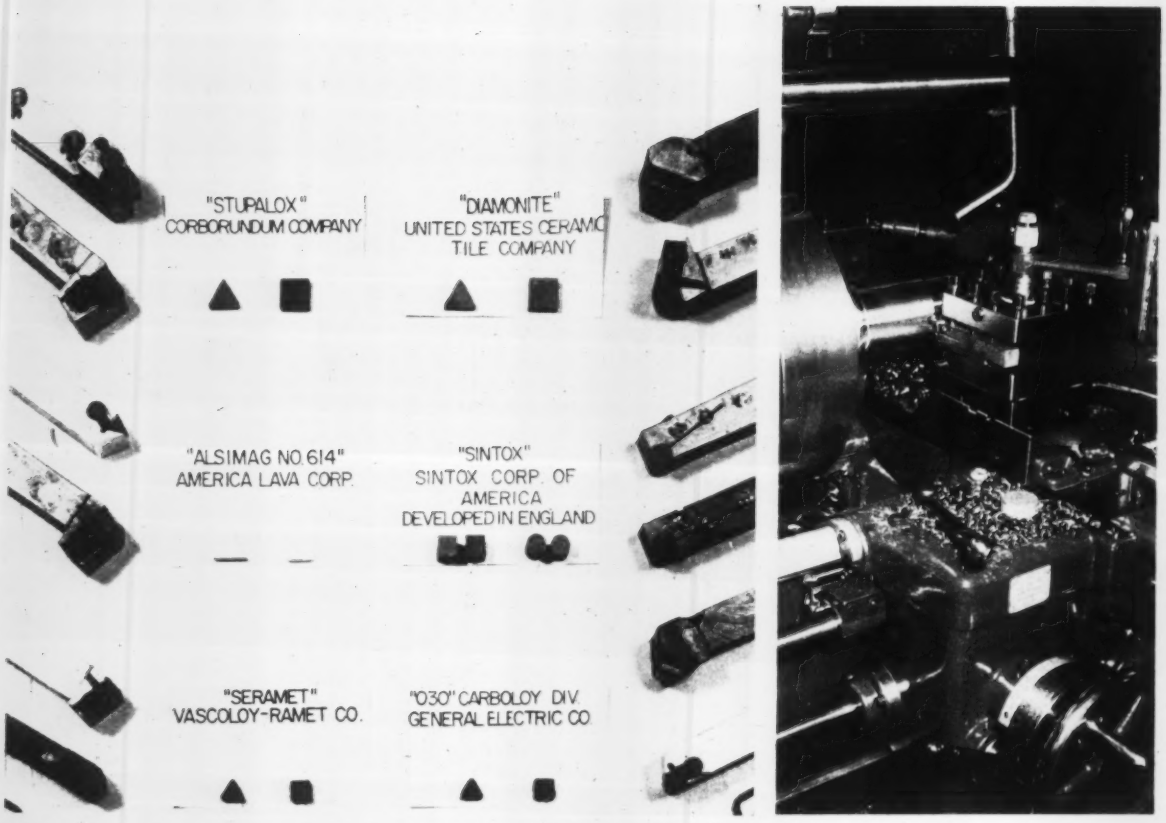
Here are a few examples: Nickel to molybdenum, copper, and tantalum-tungsten; brass to bare or tinned copper, platinum, iridium, palladium, and phosphor bronze; copper to bare or plated steel; tungsten to steel; steel to Nichrome.

Deformation—How much pressure you use depends on the nature of the metals to be welded, the contours and thickness of parts between the electrodes. When the parts are thin sheets or foil, pressure may be less than 1 psi.

Despite their size, the ½-in. copper electrodes used at Pacific Welding have the same offsets and shape as those used on conventional machines.

Materials are cleaned and formed prior to welding, although they require special handling to avoid damage.

Some metals that might be handled with standard equipment are welded with the stored-energy machine. It avoids unsightly joints which would require a lot of machining.



These ceramic-insert cutting tools were tested to destruction on eight problem metals. The conclusion: Ceramics are fine for most finishing, but not for roughing. Mirror-bright finish on workpiece at right is on tough stainless steel billet. A ceramic tool is doing the job at 500 sfpm with good tool life

Speed Boost Cuts Tough Metals

Aircraft production engineers wrestle with machining problems they get from high strength, high temperature metals. Tests show faster speeds, altered tool shapes can help

CONVENTIONAL techniques and tools can't be used to machine the muscle metals specified by aircraft and missile designers. Engineers at Ryan Aeronautical Co., San Diego, Calif., say normal machining galls and glazes Inconel, Monel, and stainless steel. Tool breakage is high, and machining time soars.

Looking for a way around the producibility barrier, Ryan engineers tested speeds, tool material and geometry, and machining methods. Results: 1. Speeds have been boosted by as much as 200 per cent. 2. Throwaway carbide inserts are used more (some ceramics for finishing). 3. Workpiece quality is better than it was before.

Gives Advice on Speeds—H. F. Wallen, chief tool engineer, makes these recommendations: Finish machine free machining stainless grades at 1000 surface feet a minute; do roughing cuts at 500 sfpm. Corresponding speed boosts work on the high strength, heat resistant alloys.

Normal speeds caused work hardening; the resulting glazed surface was practically impossible to machine. (This was especially true on interrupted cuts.) High speeds prevented this glazing.

These higher speeds were especially effective in machining large diameter jet engine components, where lack of part rigidity was troublesome. Switching to specialized fixtures and throwaway carbide inserts gave better finishes, higher speeds, and longer tool life.

Tool Geometry Studied—During the Ryan study, engineers found that exceptionally high rake angles, especially for straight roughing, gave the best results. In interrupted cuts, lower rake angles (using a negative rake, shear type tool) worked well. This applied both to brazed and throwaway tools.

Milling performance also im-

proved with these techniques. Negative rake, carbide insert, milling cutters will perform better at, or above, speeds used in turning operations. At slower speeds, rake angles should be increased. All milling operations should be climb-cut wherever possible.

On high strength, alloy sheets, piercing is preferable to drilling whenever the hole size is 1½ times the thickness of the metal, or more. Piercing is practically mandatory in the 400 series stainless steels. Some economy can be obtained on heavier metals and forgings by using nitrided high-speed drills with a 135-degree included angle and a crankshaft grind. Although a drill with a thinned web is preferred to the crankshaft grind, it's hard to get consistent geometry because the drills must be ground offhand.

Small holes are practically impossible to drill accurately in the high temperature alloys. This problem was solved with an Elox disintegrator, which drilled holes to rivet tolerances in about 7 minutes.

Ceramics Also Tested—Although they have been used successfully in normal machining operations, practically nothing was known about ceramic tool performance in machining high temperature, high strength metals. To get this information, Ryan engineers set up a program which deliberately tested these tools to destruction to find out just how well they could machine tough missile metals. Eight metals, including three kinds of stainless, four alloy steels, and SAE 4140 were studied.

In one series of tests, flange and interior bands of a jet engine case were machined with ceramic tools. They performed fairly well in facing the flange of the part, but not as well as comparable carbide tools.

In another series of tests on the ceramic inserts, Ryan engineers attempted to rough and finish machine a billet of Type 347 stainless. Conclusion: Ceramics cannot be expected to perform adequately on out-of-round work, or for heavy cuts, or on work-hardened surfaces.

However, when finish machining was attempted on the billet, the ceramic tools outperformed the carbide inserts. The ceramic tools gave finishing cuts at higher speeds than carbides, with comparable life.

Dealers Hit Inequities

Sellers of used equipment demand depreciation provisions and a stop to government dumping of surplus machines. They want surplus sold through regular dealer channels

SELLERS of used machine tools, hard hit by the recession, are taking a close look at two government influences on their business—the dumping of surplus government-owned machines on the market and the lack of depreciation favors for the buyer of used equipment.

Resolved—At their recent annual meeting at Miami Beach, Fla., members of the Machinery Dealers National Association adopted an eight-point resolution. Out of it come these recommendations:

Continued work must be done with government to stem "the tidal flood of surplus machine tools onto the market." The flow must be directed through regular trade channels (the dealers) so it does not affect private commerce. E. W. Pfeil, association president, told STEEL the industry wants the government machines to be sold to dealers on bids, rather than being dumped wholesale on the open market. This, he feels, would bring the machines to the customers through reputable dealers whose private interest is this kind of sale. It would, in effect, remove the government from its position as the country's largest used equipment dealer.

Government inequities on depreciation also drew fire. "We want the privilege of used machine tool depreciation equal to that of new tools." Also recommended: Free selection of depreciation by a user, based on his estimate of the life of a tool for his needs.

As a further deterrent to machine tool dumping, dealers suggest that surplus machine tools owned by the government should be given to friendly foreign countries as part of our economic aid program. This would give the aid at reduced cost to the government and would relieve the surplus threat to U. S. sellers.

Machining Cobalt Alloys

If your production men are having trouble machining some of the superalloys containing cobalt, a recent report from the Cobalt Information Center, Battelle Memorial Institute, Columbus, Ohio, may help. It gives cutting recommendations for most of the machining operations, and it deals with 22 of the superalloys including several of the Refractaloys, Nimonic 90, Inconel 700, Udimet 500, and Haynes Stellite 31.

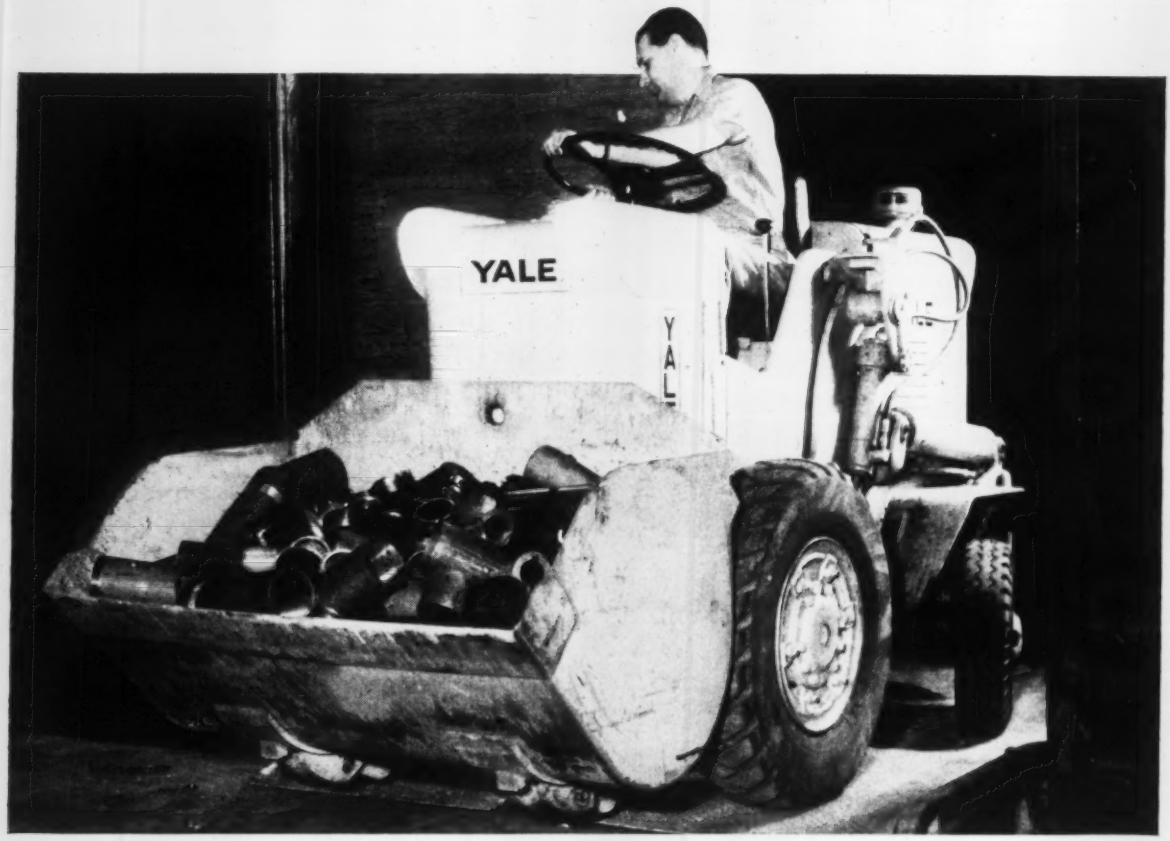
Here are some excerpts:

Drilling—This is the toughest of all machining operations. A positive feed is a must—so is a sharp drill; don't use pilot drills. Speeds will vary from 12 to 35 sfpm, depending on the alloy. Feeds range from 0.0015 to 0.007 in. per revolution, depending on alloy and drill size.

Turning—This one is relatively simple, but it takes low speeds. High speed steel, cast alloy, and carbide tools can be used, but high-vanadium HSS at reduced speeds works best on interrupted cuts. Get rigidity into both the workpiece and the tool. Highest cutting speed listed in the report is only 175 sfpm.

The report concludes with the statement: "There are two unusual metal removal methods which may be applicable to superalloys—hot machining and electrical discharge. The use of heated workpiece for machining operations on other metals has met with excellent success." As to the electrical discharge method, the report points out that there is no tendency to strain harden the work.

NEW YALE INDUSTRIAL TRACTOR SHOVEL



Carries more tonnage every hour

—field tests prove it!

Actual field tests prove the amazing work-capacity of the new Yale Industrial Tractor Shovel. Extra tonnage—extra work—extra duty cycles! Operating acceleration speed is 8 mph in 3.5 seconds. And Yale's exclusive fully automatic Torque Transmission produces quicker, smoother starting, more power under load conditions.

Loader-linkage advantages are unique. Exclusive 45° ground-level tipback provides top loading action, minimum spillage in grade-level position. Exclusive 6′ dumping clearance (highest on any model of similar wheelbase) automatically returns bucket from full dump position to dig position.

Let your operator work with it. He'll like the roomy, clear cockpit—the finger-tip controls—the ease of handling—the fact that there are no gears to shift. He'll especially like Yale's exclusive Safety-Curve Arms—that never rise above the side frame to cause injury. For a demonstration in your plant or further data write The Yale & Towne Manufacturing Co., Philadelphia, Pa., Dept. A-86.

COMPARE THESE YALE FEATURES:

- Exclusive Yale Torque Transmission (fully automatic)
- Exclusive 45° ground-level bucket tipback
- Exclusive 6′ dumping clearance
- Exclusive Safety-Curve Arms
- Exclusive acceleration speed to 8 mph. in 3.5 sec.
- Exclusive sealed brakes
- Exclusive forward and rear operating lights
- 2500 lbs. carrying capacity
- Short wheelbase for minimum turning radius
- Gasoline or LP-Gas powered

YALE* *REG. U.S. PAT. OFF

YALE & TOWNE

INDUSTRIAL LIFT TRUCKS & TRACTOR SHOVELS • HOISTS

GASOLINE, ELECTRIC, DIESEL & LP-GAS INDUSTRIAL LIFT TRUCKS • WORKSAVERS
WAREHOUSERS • HAND TRUCKS • INDUSTRIAL TRACTOR SHOVELS • HAND AND ELECTRIC HOISTS

YALE MATERIALS HANDLING DIVISION. THE YALE & TOWNE MANUFACTURING CO. MANUFACTURING PLANTS: PHILADELPHIA, PA.; SAN LEANDRO, CALIF.; FORREST CITY, ARK.

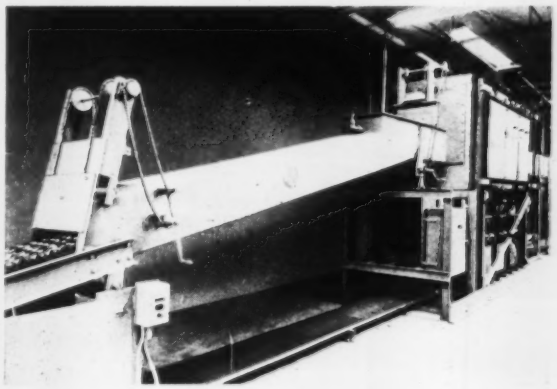
Furnace Has Low Protective-Atmosphere Consumption

A hump type, mesh belt furnace uses high purity brick for its heating chamber lining, eliminating the need for metal muffle.

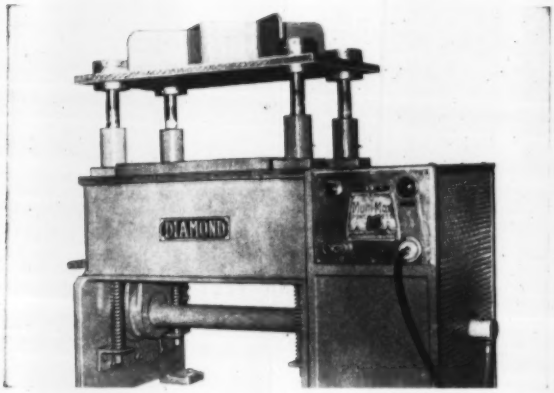
Designed for operating temperatures up to 2100° F, depending on mesh belt and load limitations, the furnace is used for high production bright annealing, brazing, and atmosphere quenching of stainless steels and applications requiring a low dew point atmosphere.

Hump-type construction provides bright, oxide-free results. Protective atmosphere gas consumption inside the elevated heating chamber is kept low as a result of this design.

Belt widths from 12 to 36 in. and heating chambers up to 12 in. high are available. *Write*: General Electric Co., Schenectady 5, N. Y. *Phone*: Franklin 4-2211



Punch Press Is Accessible from Four Sides



The four-post Multi Max punch press, for short run production and standby tooling, can be converted quickly for automatic stamping by adding any standard roll or hitch feed.

Accessible for manual or automatic feeding from all four sides, this punch is desirable for assembly line work, or as an integral stamping station in an automatic line. Progressive or transfer fingers can be connected to the underdrive.

Controls for single stroke, continuous running, inching, and jogging are electrical.

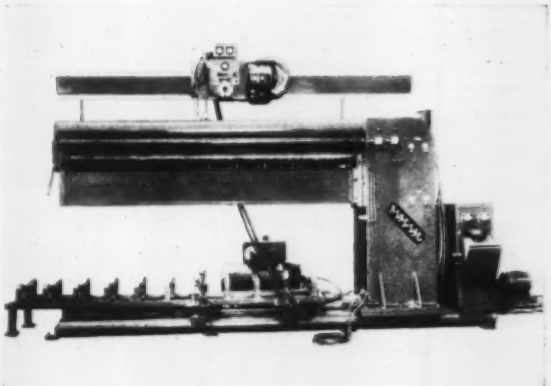
The model shown has 1½-in. stroke, 350 strokes a minute, 10-in. die shut height, and a 2-in. ram adjustment. *Write*: Diamond Machine Tool Corp., Pico, Calif. *Phone*: Raymond 3-8254

Machine Positions Heavy Workpiece Edges for Welding

A high pressure welding positioner, Model LW10920, joins metals up to ½ in. thick in regular configurations (flat sheets, cones, or cylinders) up to 54 in. outside diameter.

A Hydro-Booster unit activates two parallel banks of hold-down gripping fingers. The fingers place the two edges of the piece together and hold them under great pressure. Air from shop lines operates the booster.

Interchangeable mandrels are available, and are equipped with thermostatically controlled oil heating devices to preheat the weld joint and postheat the weld in crack-sensitive metals. Mandrels can be heated up to 600° F. *Write*: Airline Welding & Engineering, 785 Prairie Ave., Hawthorne, Calif. *Phone*: Osborne 5-2225

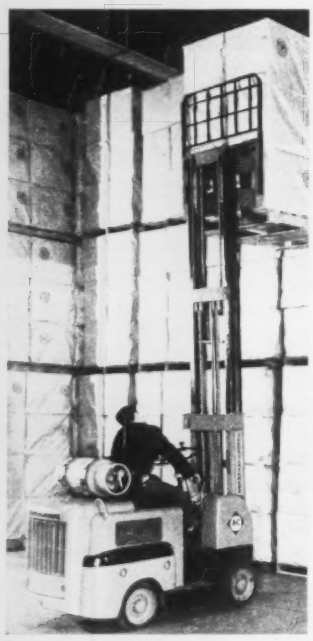


NEW PRODUCTS and equipment

Mast Uses Simple Design

The Tri-Lift mast for cushion and pneumatic tire lift trucks in the 3000 to 5000 lb class comes in 11 basic sizes.

Height variations permit the trucks to work in enclosed trailers or boxcars, or to stack to extra heights. The mast uses a block-and-tackle arrangement rather than latches and ratchets.



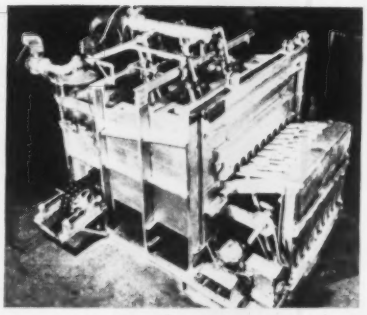
Open space between rails when the mast is raised, and below eye-level position when lowered provides improved visibility. *Write*: Tractor Group, Allis-Chalmers Mfg. Co., Milwaukee, Wis. *Phone*: Spring 4-3600

Furnace Burners Down-Fire

This pusher type furnace, built by J. A. Kozma Co., Detroit, has a shell of reinforced steel plate which is lined with superduty refractory brick backed by insulation.

The hearth is alumina tile backed by lightweight, high temperature concrete and insulating brick.

Flues in the side walls of the furnace take off at hearth level, insuring maximum use of combustion products before their removal. Billets are charged into the furnace one at a time by a 12-position mechanical pusher (cam actuated).



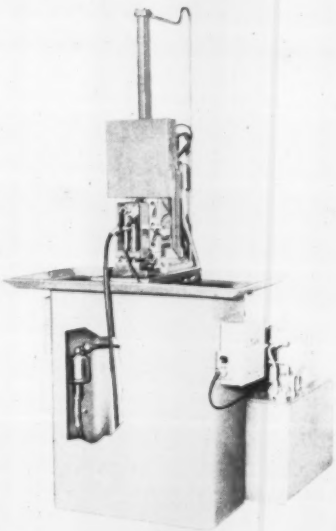
Four piloted Hauck Series RCG Hi-Radiant cone burners utilize low pressure gas and air, and down-fire through the roof of the furnace. Short flame length and low forward velocity of combustion gases allow placing the burner cones close to the forgings without danger of flame impingement. *Write*: Hauck Mfg. Co., 124-36 Tenth St., Brooklyn 15, N. Y. *Phone*: South 8-7309

Broach for Small Shops

A moderately priced, bench mounted broaching machine brings the speed, accuracy, and economy of broaching within reach of the small metalworking shop.

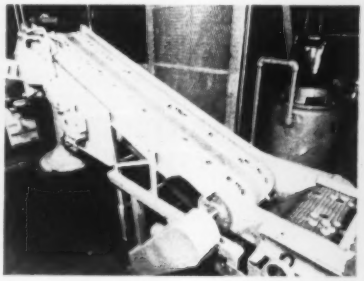
Although it was designed for surface broaching of small parts, the unit can also be used for internal work and will accommodate interchangeable broaches up to 2½ in. wide. Accuracy to 0.0002 in. and surface finishes to 10 microinches are possible.

The machines are made in capacities ranging from 2000 to 6000 lb force on the ram, ram stroke from 6 to 24 in., and ram speeds from 20 to 60 fpm. Hydraulic power is furnished by a self-contained unit. The bench has coolant tank, pump, control panel, and switches built into its base. *Write*: Ty Miles Inc., Box 446, Elmhurst, Ill.



Magnetic Unit Also Cleans

This nonelectric magnetic pulley (center) is doing several functions simultaneously. As metal caps reach the end of the conveyor (right), they slide and are picked up by the magnetic fields of the Alnico V elements within the Eriez pulley.



The magnetic fields align the caps in two rows for packaging. Caps are drawn across a small gap so that any nonmagnetic particles will drop. *Write*: Eriez Mfg. Co., Erie, Pa. *Phone*: 4-0133

Anticorrosive Coating

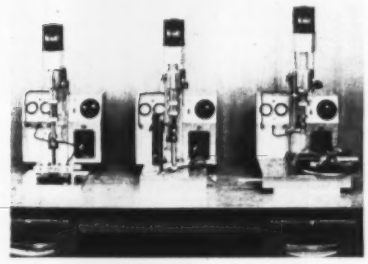
Komul is an irreversible, uniform emulsion of coal tar pitch stabilized with mineral colloids. It can be applied without heating and has good resistance to the effects of temperature change.

The product contains no bentonite clay, soluble soap, asphalt, sulfite pitch, or sulfonic acids. It resists gasoline and oils and is effective as a sealer over bituminous asphalt driveways. Coated surfaces can be burned through by torch or studwelded without fear of fire (it will char at 800° F). Komul is nonvolatile and gives off no toxic fumes. *Write*: Selby, Battersby & Co., 5220 Whitby Ave., Philadelphia 43, Pa. *Phone*: Granite 4-4790

Rapid Permanent Marking

A high speed method of producing permanent electrolytic marks on metal parts has a portable 70-lb marking instrument that incorporates both electrolytic marking pow-

NEW PRODUCTS and equipment



er source and control circuits which govern stroke and dwell of the ram.

The Lectroetch method has no adverse effects on metal. Two types of marks can be made: Etched and oxidized.

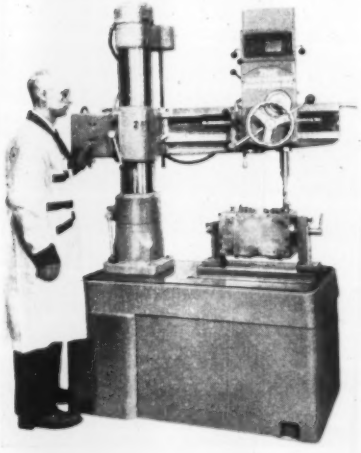
The basic instrument is provided in three models for use with different classifications of parts requiring special feeding methods. Stencils employed can produce more than 5000 marks before signs of wear and are produced with legends to customer specifications. *Write*: Lectroetch Co., 14925 Elderwood Ave., East Cleveland 12, Ohio. *Phone*: Glenville 1-8080

Drill Column Scoreproof

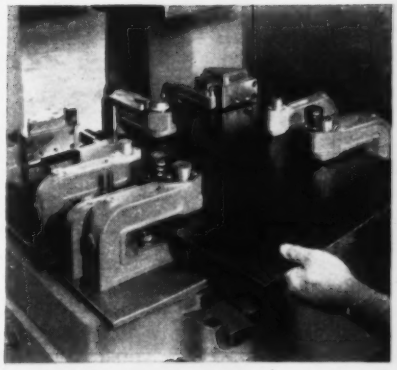
A precision, 3 ft radial drill has a scoreproof nickel-moly alloy column that turns on Timken bearings. It has hardened way inserts on the head and arm which are easily replaceable.

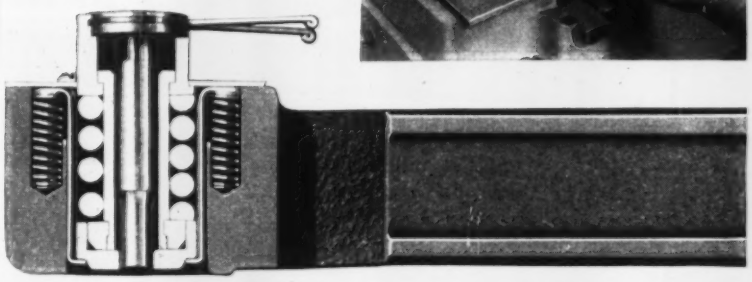
Quick action clutching speeds drill operation, and a cam lift head clamp insures squareness of head to widened dovetail on the arm.

Geared to the 16 spindle speeds



Strippit Punching and Notching Units are easily mounted to templates, T-slotted plates or rails in unlimited patterns for long press runs or quick-change pilot runs. Complete range of standard tools, or "specials" made up on request.





the **bench man** does the tooling!

STRIPPIT multiple punching and notching

THE ABOVE CUTAWAY of a Strippit Punching Unit — one of a wide selection for flats, structurals and extrusions up to ¾" mild steel — illustrates the extreme flexibility, high production and economy of the Strippit system.

NOTE THAT each unit is complete with punch, die button, stripping guide, guide button, lifter assembly and retainers — all quickly interchangeable in a husky holder and actuated by the press ram. Multiple punching — and notching — press setups are easily bench-assembled on drilled mounting templates, with each unit accurately located by the pilot pin in its base. Press down-time is almost negligible in setups of Strippit Punching Units, Notching Units, Punch and Die Assemblies or combinations of all three.

Write today for full details and if you wish, a demonstration on your work at your plant by a Strippit mobile unit.

Warehouse stocks in Chicago and Los Angeles.

A UNIT OF HOUDAILLE INDUSTRIES, INC.

WALES STRIPPIT COMPANY

210 Buell Road, Akron, New York

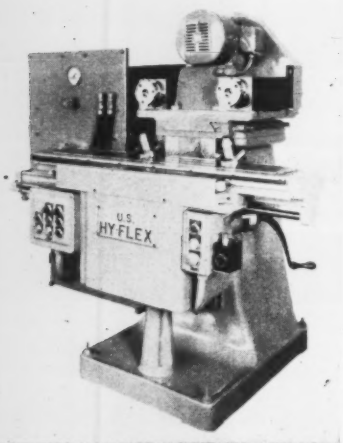
Manufactured in Canada by Strippit Tool and Machine Limited, Brampton, Ontario

are four power feeds. A drill ejector in the spindle speeds tool changes. *Write*: Veet Industries, 25753 Groesbeck Highway, East Detroit, Mich. *Phone*: Prescott 6-3000

High-Production Milling

A Hy-Flex milling machine for high production applications may be equipped with as many as three spindles positioned as required and with any desired electrically controlled hydraulic table feed cycle.

The unit illustrated has two precision spindles which are bolted to a common slide, equipped with adjustable gib, Acme screw, and micrometer dial for accurate adjustment.

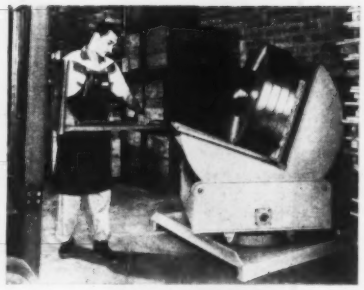


Idler pulleys are provided to permit changing the position of the spindles according to job requirements and still furnish proper belt tension. *Write*: U. S.-Burke Machine Tool Div., Cincinnati Mfg. Corp., 5055 Brotherton Rd., Cincinnati 27, Ohio. *Phone*: Bramble 1-5000

Cradle Cuts Handling

A portable machine which handles rolls of metal strip and other heavy materials automatically rotates several rolls of material from an on-edge to a horizontal position, palletizing them simultaneously.

In a reverse sequence, the Turnover Cradle sets coiled material on edge, ready for feeding to a machine or cutting table. Each sequence takes 14 seconds.



The device eliminates damage to coiled material, and subsequent machine malfunctions or scrap loss. Capacity of the unit illustrated is 6000 lb (this may be extended to meet requirements). *Write*: La Deau Mfg. Co., Los Angeles, Calif. *Phone*: Capital 2-8108

Bending Pressure 7000 lb

A hydraulic pump (controlled by a thumb-operated switch and driven by a 1½ hp, 110 volt motor) provides bending pressure of 7000 lb in this No. 6 bending machine.

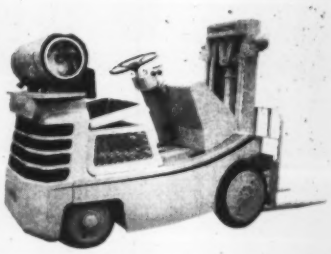
Depressing or raising the control handle provides forward or reverse action. An adjustable lever positions the dies for correct gap to match material thickness or for various radiuses without need for die change —within the limits of the dies being used.

Supplied with the machine are 26 dies which include nine female and six male dovetail units, and 11 mandrel dies. Maximum opening is 4 in. Stroke is 1½ in. Minimum closing between heads is 2 in. *Write*: J. A. Richards Co., 903 N. Pitcher St., Kalamazoo, Mich. *Phone*: Fireside 3-4684

Seat Brakes Truck

A safety brake seat is being built into the Dynamotive lift truck as an extra. A hinged seat replaces the conventional hand-operated parking brake lever.

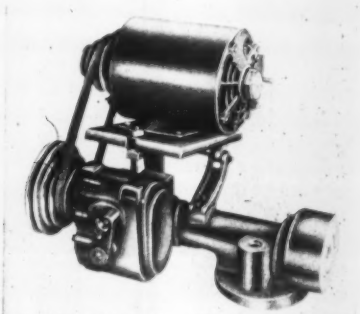
The seat is retained by a spring in braking position when it is unoccupied. It can also operate a pneumatic switch timed to open the ignition circuit and stop the power supply.



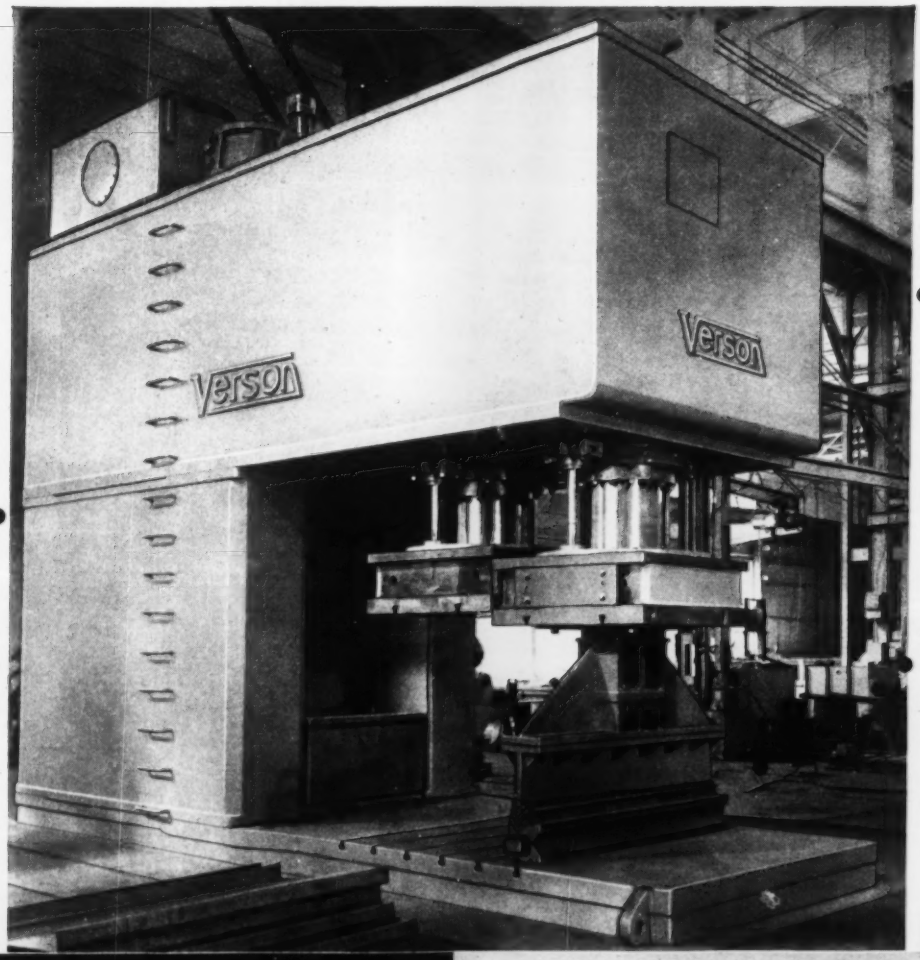
Accessibility for servicing the truck has not been affected. *Write*: Automatic Transportation Co., 149 W. 87th St., Chicago 20, Ill. *Phone*: Radcliffe 3-7000

Attachment for Milling

An attachment for keyseating, milling, slotting, drilling, shaping, boring, splining, squaring, and hexing can be mounted on lathes, milling machines, planers, and boring mills.



Precision work can be performed on small or large parts. The unit requires little space. It has six speeds ranging from 200 to 900 rpm. *Write*: Alva Allen Industries, 1001-15 N. Third St., Allen Bldg., Clinton, Mo. *Phone*: 1286



VERSON VERSATILITY AT WORK

...one press handles a wide variety of metal forming jobs

This Verson Hydraulic Flanging Press is installed at the yard of a prominent shipbuilder. Engineered and built by Verson, it provides the user with extreme versatility . . . a single press capable of handling varied metal forming requirements. Making a relatively simple 90° vee bend . . . forming or dishing cylinder heads or ship plate . . . this machine takes it in stride.

The press has three rams . . . two vertical and one horizontal. The vertical rams have a capacity of 500 tons each and may be operated individually or locked together as a 1000 ton unit. Capacity of the horizontal ram is 300 tons. Depth of gap from point midway between vertical cylinders to frame is 72", stroke is 36" and the press table measures 144" x 96".

What Verson versatility is accomplishing for thousands of press users around the world . . . it can do for you. Give Verson engineers a crack at your metal forming problems . . . you'll be more than pleased with the results. Just send us an outline of your specific requirements.

A Verson Press for every job from 60 tons up.

184

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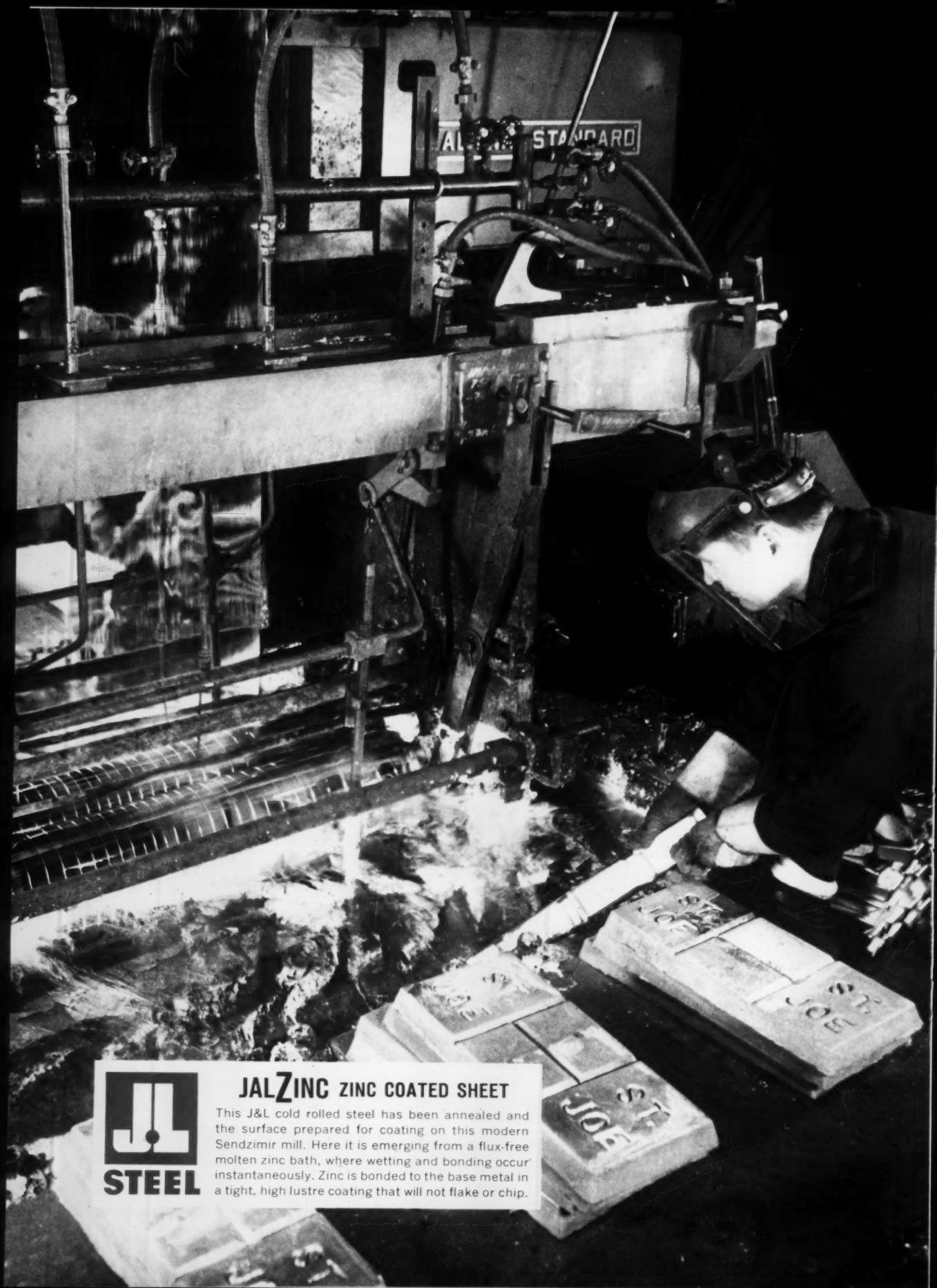


J&L STEEL

JALZINC ZINC COATED SHEET

This J&L cold rolled steel has been annealed and the surface prepared for coating on this modern Sendzimir mill. Here it is emerging from a flux-free molten zinc bath, where wetting and bonding occur instantaneously. Zinc is bonded to the base metal in a tight, high lustre coating that will not flake or chip.

"JalZinc gives us maximum corrosion resistance. And there's no flaking in our tough crimping operation."

. . . reports builder of unique steel structures

"JalZinc sheets meet our requirement for strong, corrosion-resistant zinc coated sheet that will hold its finish through tough transverse crimping operations," states Mr. Peter S. Pedersen, Jr., president of Wonder Building Corporation of America, Chicago.

JalZinc is produced by J&L, a major integrated steel producer, under the most rigid quality control. J&L's modern continuous galvanizing process coats the steel with a bright, uniform spangle that improves end product appearance.

Sheet metal users across the country are finding that JalZinc is a superior quality steel that can be bent, stamped, rolled, crimped beyond belief without damage to the coating.

Ask your distributor about JalZinc for your next job, or write Jones & Laughlin Steel Corporation, 3 Gateway Center, Pittsburgh 30, Penna.

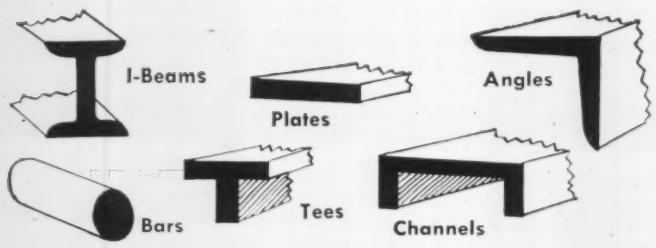
These pre-engineered trussless steel structures are fabricated at the Wonder Building plant, Chicago, from 18 gauge JalZinc sheets.

Superior quality JalZinc is readily available in a wide range of gauges and widths in both cut lengths and coils.

J&L STEEL

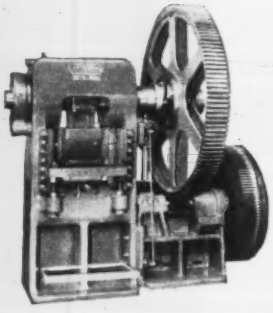
Jones & Laughlin Steel Corporation

PITTSBURGH, PENNSYLVANIA

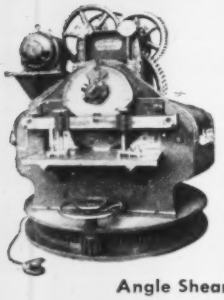


If you bend, roll, shear, punch, plane or straighten any of these shapes of metal— save time and money with

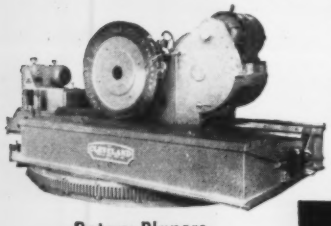
CLEVELAND
FABRICATING TOOLS



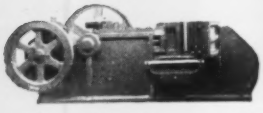
Bar Shears



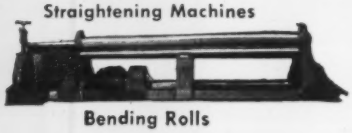
Angle Shears



Rotary Planers



Bending and Straightening Machines



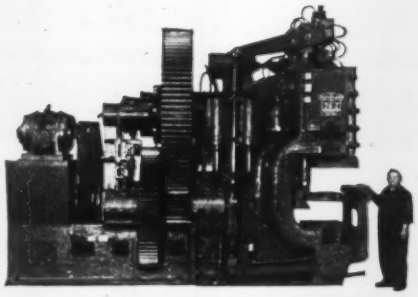
Bending Rolls

Simple to operate, ruggedly built, Cleveland Fabricating Tools are designed for efficient, trouble-free operation and years of service.

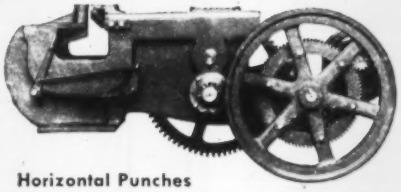
Leading shipyards, railroads, bridge builders, boiler makers, and other structural steel and heavy plate fabricators have proven the dependable, economical performance of Cleveland Fabricating Tools.

Since 1880, Cleveland has engineered its complete line of fabricating tools to be the finest, most efficient for punching, shearing, bending, rolling, straightening, planing, coping and notching I-beams, tees, zees, channels, bars, rods and other structural shapes.

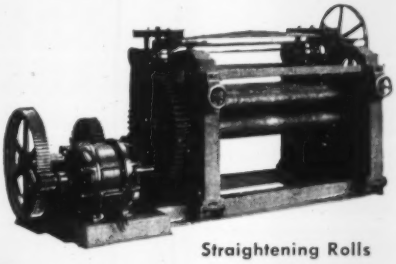
Write for Folder FT48 to help you determine the correct fabricating tool for your needs. AA-7494



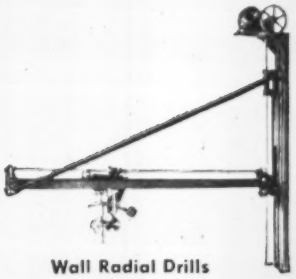
Vertical Open Gap Punching Machines



Horizontal Punches



Straightening Rolls



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Coiling and Bending

Facilities for special fabricating, bending, and coiling of pipe and tubing are described in an 8-page catalog. Typical products: U-tubes, cylindrical coils, dryer coils, hydraulic lines, and automotive exhaust pipes. Custom bending of ferrous and nonferrous metals is available. Bending limits, sizes, and material handled are listed. Swan Engineering Div., Damascus Tube Co., Bloomfield, N. J.

Machining Meehanite

"How To Machine Meehanite Castings," a 20-page booklet, presents machining data on various types of castings—divided according to type of machine tool used. It's intended as a setup guide. Meehanite Metal Corp., 714 North Ave., New Rochelle, N. Y.

Brazing Instructions

"Brazing Manual," a 22-page book for self-instruction or class training in joining of metals, is addressed to the service trades. It has illustrated data on brazing shapes, sheets, castings, tubing, and assemblies of copper, brass, steel, aluminum, and cast iron.

Extruded Shapes

"Revere Extruded Shapes: Copper, Brass, and Other Copper Base Alloys," is an authoritative 44-page booklet. It contains pictures, charts, technical data, and a review of design and cost advantages with 16 case histories. Engineers will find a simplified drawing of the extrusion process, group drawings of extrudable shapes in profile, tables of comparative properties of copper-base alloys, advice on how best to select these alloys, and descriptive data on high conductivity copper bus channels and angles. Machinability and other characteristics of extruded shapes are covered. Revere Copper & Brass Inc., 230 Park Ave., New York, N. Y.

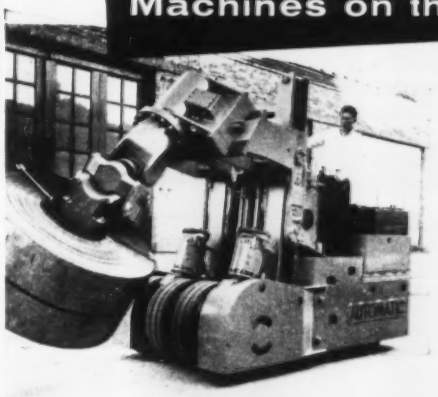
Hydraulic Cylinder

A compact, 1⅛ in. bore, hydraulic cylinder of the C4H Series is detailed in a 6-page bulletin, No. 658. The cylinder is the square head, all-steel, interchangeable type. It has 14 standard mountings and four rod end styles. It is rated at 2000 to 3000 psi. Sheffer Corp., 326 W. Wyoming Ave., Cincinnati 15, Ohio.

Cadmium Strip and Foil

A data sheet tabulates the physical and chemical characteristics of ultrathin and precision tolerance cadmium strip and

Machines on the move.....



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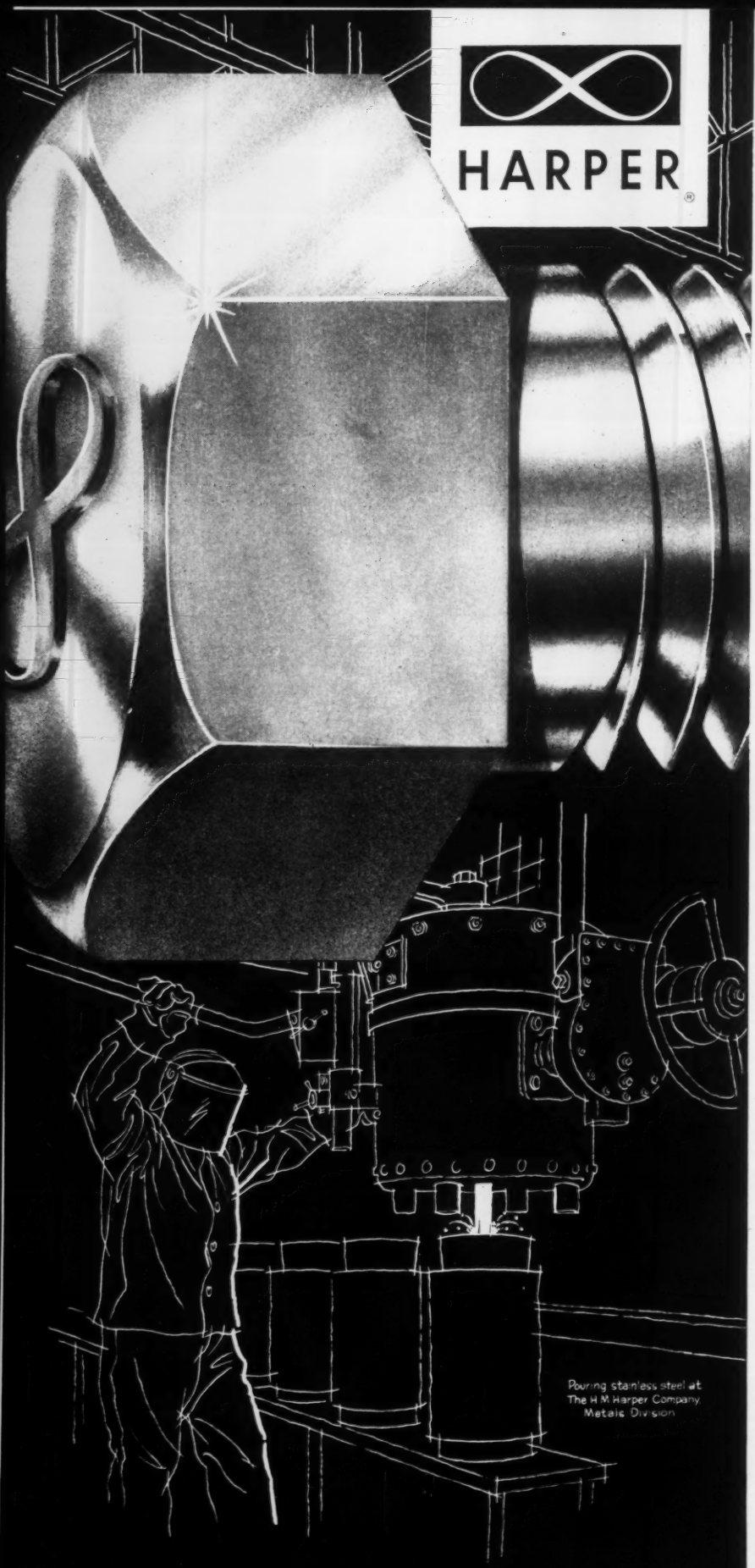

NEW LITERATURE . . .

foil. Mechanical properties, nuclear data, and mill limits in easy to use form are included. American Silver Co., 36-07 Prince St., Flushing 54, N. Y.

High Pressure Tubing

Dimensions, pressures, and performance properties of Grayloc tubing are contained in an 8-page booklet. Featured is a tubing joint with positive leak resistance at high pressures. Public Relations & Advertising Dept., Jones & Laughlin Steel Corp., 3 Gateway Center, Pittsburgh 30, Pa.

Fusion Bond Finishes

A 4-page bulletin describes a line of Corvel cellulosic, nylon, polyethylene, K-51 (chlorinated polyether), and other fusion bond finishes for use in cladding metal parts. Finishes are dry powders for the Whirlclad process, a fluidized cladding now available under license. National Polymer Products Inc., subsidiary of Polymer Corp., Reading, Pa.

Tooling Directory

The 1958 Directory of Special Tooling Services has been issued. The 76-page book lists more than 1000 contract tool and die plants in the U. S. and Canada. Included are names of individuals to contact and the specific products and services offered. National Tool & Die Manufacturers Association, 908 Public Square Bldg., Cleveland 13, Ohio.

Seamless Steel Tubing

A 28-page booklet lists seamless steel tubing carried in stock. Aircraft and aircraft mechanical grades are shown in round, square, elliptical, rectangular, hexagonal, and streamlined cross sections. Ohio Seamless Tube Div., Copperweld Steel Co., Shelby, Ohio.

Resistant Castings

Bulletin No. 2537 on castings resistant to high-temperature corrosion and abrasion describes production facilities and laboratory and illustrates typical castings produced. Tables give temperature properties of various heat resistant alloy castings, composition and typical uses of the alloys. National Alloy Div., Blaw-Knox Co., Pittsburgh 38, Pa.

Milling Machines

A circular, "Sunstrand Model C Ridgidmils," gives specifications and dimensions. Optional equipment is described. Sundstrand Machine Tool Co., Rockford, Ill.

Vibratory Screens

A 14-page catalog lists data and specifications on pulsating magnet, concentric action, unbalanced pulley, and Grizzly Bar vibratory screens and screening feeders. Syntron Co., 370 Lexington Ave., Homer City, Pa.

Side-Loading Truck

A side-loading handling unit, the Traveloader, is described in an 8-page bulletin, No. 1360-B. The unit performs three

operations: Stacks like a fork truck, carries like a platform truck, and delivers like a road truck. Capacities range from 4000 to 30,000 lb. Baker Industrial Trucks, division of Otis Elevator Co., 1250 W. 80th St., Cleveland 2, Ohio.

Water and Waste Problems

A booklet describes the services available from a consulting firm specializing in water supply, industrial water pollution control, sewage treatment, and air pollution control. It includes a list of industries served and qualifications of top staff. Roy F. Weston Inc., 4 St. Albans Ave., Newton Square, Pa.

Machine Tools

An entire line of precision machine tools is covered in an 80-page catalog, No. 5800. Equipment shown includes engine, toolroom, and turret lathes; vertical spindle milling machines; bench shapers; drill presses; and pedestal tool grinders. Attachments, tools, chucks, and accessories are listed. Capacities, floor space requirements, and shipping weights are tabulated. South Bend Lathe Works, South Bend 22, Ind.

Fan Motors

Bulletin GEA-6598 describes a complete line of totally enclosed Tri-Clad 55 air-over motors from 7½ to 100 hp for propeller and axial-flow fans. General Electric Co., Schenectady 5, N. Y.

Aluminum Alloy Castings

Technical information on aluminum permanent mold and sand castings, including data on their application, specifications, physical properties and characteristics, is presented in a 24-page folder. Dept. ST, Permold Co., Box 70, Medina, Ohio.

Centrifugal Fans

Bulletin BB-105 covers a complete line of backward-blade fans, designed for use in heating-ventilating and air conditioning systems, power plant installations, and industrial processes. General Blower Co., Morton Grove, Ill.

Vacuum Arc Furnaces

An 8-page publication, GED-3599, shows savings in cost and space, reduced maintenance, maximum utilization, and manufacturing quality made possible by vacuum arc melting as a production technique. The bulletin describes the principle used in designing such furnaces and discusses the components, controls, and instrumentation of units for laboratory, pilot plant, and production operations. General Electric Co., Schenectady 5, N. Y.

Vibrating Feeders

A line of air operated vibrating feeders is covered in a bulletin. Feeding rates are controlled by changing operating air pressures. Cleveland Vibrator Co., 2828 Clinton Ave., Cleveland 13, Ohio.

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In its Metals Division, Harper melts the ingredients of the stainless steels, brasses, bronzes, and now high-temperature alloys, into the proper alloy—and makes the ingots which are extruded into wire and bar and then drawn to exact size needed for bolts, nuts, screws, rivets, and washers (special parts, too).

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FOR OPTIMUM RESULTS

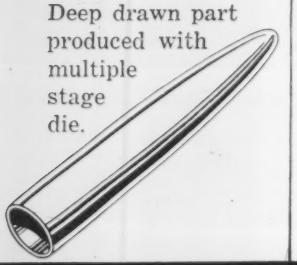
J&L STRIP STEEL DIVISION

restricted specification cold rolled strip steel

Oftentimes, sound selection of cold rolled strip steel should involve more than making a choice of one or more readily available, standard specifications. To achieve best fabricating results, or to improve manufacturing performance and end-product superiority, may require the employment of strip steel specially designed for your particular use. J&L Restricted Specification Strip Steel is that kind of product. As an example look at this . . .

TYPICAL APPLICATION . . .

product	specification	results
Deep drawn part produced with multiple stage die.	Low Carbon Deep Drawing Steel Size—3″ x .010 Analysis—AISI—1010 Temper—Deep drawing, non-scalloping Finish—#2 Tolerance ± .0002 including crown Width Tolerance ± .002 Coil Size—250# per inch width min.	Improved yield. Improved die life. Reduced finishing operations after drawing. Less quality control cost.

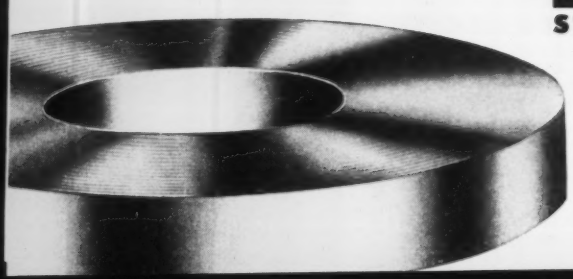


J&L STRIP STEEL DIVISION produces a full line of restricted and standard specification strip steel in these grades and types:

- Low Carbon
- High Carbon
- Tempered Spring Steel
- Molten Zinc Coated (JalZinc)
- Electrolytic Zinc, Tin, Copper & Brass Coated
- Alloy
- Stainless
- Painted

The experience, facilities and accumulated know-how of a specialized organization devoted exclusively to strip steel processing are available to work with you. In this clearing house of strip steel engineering and application information, it's a good bet there is something of value for you. Your inquiry will get our immediate, interested attention.

STRIP STEEL



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Market Outlook

Orders Rise as Buyers Hedge

ENCOURAGED by a sudden pickup in June orders, steelmakers are wondering how much of the improvement is real. If price hedging is an important factor in the upturn, recovery may be only an illusion. Consumers may buy more steel than they need in June and next to nothing in July.

Until recently, the price outlook has been so clouded that steelmen have given little thought to the possibility that buyers might hedge. They've assumed that increased orders would reflect either seasonal improvements in demand or a slowdown in inventory reduction. Now they're not so sure.

HEDGING ON TUBES—Commenting on a sudden surge of orders for oil country tubing and casing, a sales executive declares: "There's little doubt that hedging is having some effect. Even though inventories are generally high, we've had a lot of orders from distributors in the last few days. If the trend continues, our June sales may jump 20 to 25 per cent . . ."

Pressure and mechanical tubing seem to be unaffected by hedging, probably because users can't anticipate specialty requirements.

BARS AFFECTED, TOO—"If orders continue at the current rate, we'll operate at 50 per cent of our capacity for the first time this year," says a producer of hot-rolled bars. "In the last few days, we've had a rash of orders—mostly from makers of farm implements and consumer hard goods. Some of our customers are buying to replace low stocks; others are evidently hedging against a possible price increase."

FABRICATORS TRIM STOCKS—Although they think higher steel prices are coming, structural fabricators aren't stocking up. They're afraid interest costs and scrap losses would more than offset what they could gain by hedging. Having no standard products, they delay ordering plates and structurals until they know exactly what they'll need for a job. So long as they can get four-week delivery from mills, they're unconcerned about low inventories.

AUTOMAKERS FOLLOW SUIT— In the last three weeks, automotive inventories of cold-rolled sheets have dwindled from 26 to 15 days. June buying will be aimed at finishing off 1958 models, not at beating a price increase. Some observers think automakers are keeping their inventories low for tax purposes. Given the option of paying tax on average monthly inventory or inventory at yearend, they're using the monthly average system and keeping stocks low for as many months as possible.

STEEL IMPORTS OFF— Considering the furor that's being raised over imported steel, it's interesting to note that AISI statistics for January show imports were less than half of what they were in January, 1957 (72,237 tons, vs. 145,369). Wire and nails are being imported in slightly greater tonnages than they were a year ago, but pipe and structural imports have been drastically curtailed. Our exports have declined only moderately, from 612,418 tons to 326,845.

RAILROAD ORDERS DOWN— Last year, railroads consumed 5 per cent of the nation's finished steel. This year, they're among the industry's poorest customers. In April, they ordered only 278 freight cars, compared with 6478 a year ago. They took delivery of 5163 cars (vs. 8961 last year). On May 1, 1957, the backlog of cars on order was 105,190. Now it's 32,908.

INGOT RATE ADVANCES— Last week, steelmaking scored its fifth consecutive advance. Furnaces were operated at 56.5 per cent of capacity, up 2 points.

Production was about 1,525,000 net tons of steel for ingots and castings, the highest of any week since mid-January.

WHERE TO FIND MARKETS & PRICES

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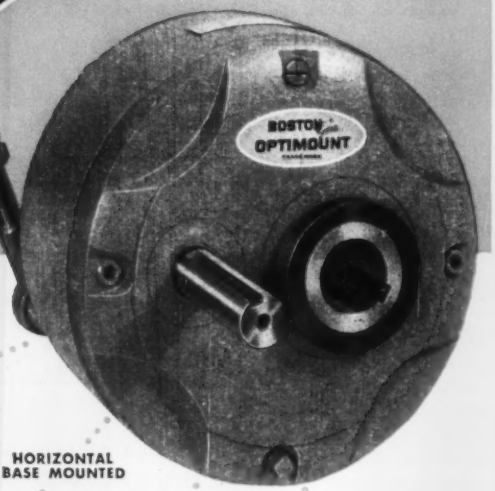

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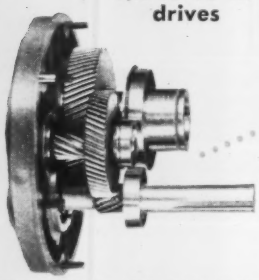
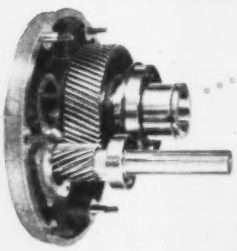
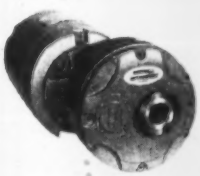




HORIZONTAL BASE MOUNTED

VERTICAL BASE MOUNTED

SHAFT MOUNTED



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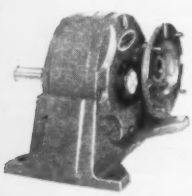

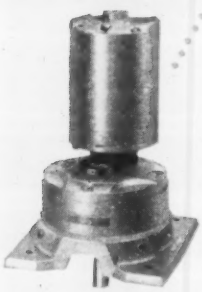

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Die design for cost reduction at Worcester Pressed Steel Co., Worcester, Mass.

Stampers Predict Upswing

Most executives in that field feel that bottom of recession has been reached. They expect upturn to start early in fourth quarter and to become strong by January

"DOWN BUT OPTIMISTIC" is how job shop stampers describe themselves as the second quarter nears its end. Most stampers queried by STEEL report sales this year are from 35 to 50 per cent under those in the same period of 1957.

Slight optimism springs from a general feeling that the worst is over and relief is in sight. "We don't expect much upswing before January, but things shouldn't get any worse so at least we'll still be in business then," is the way one industry executive puts it. He reports his business is off 45 per cent for the first three months, but bookings in April were only 10 per cent lower than those of a year ago.

Most stampers are running with reduced forces and most have cut back to four-day workweeks. Significant is the fact that employment cuts have leveled off since February. None of the industry representatives questioned indicate being ready to call back employees, but nearly all indicate they feel no further layoffs will be needed.

Backlogs Are Short—Most stamping firms are operating with backlogs no longer than 60 days. Some are down as far as three or four weeks. The situation of many is expressed this way by one stamper: "Based on May production projections, we have a six-month backlog. Unfortunately, 40 per cent of this is on a delayed basis and does not help our planning."

Looking at the brighter side, the majority of stampers are not crying about short backlogs since, in recession times, quick delivery is paramount for any firm hoping to get orders.

Captives Are Fading — Opinions vary on the job shop vs. captive shop situation, but most industry executives feel captive plants are becoming less important. (Captives are stamping shops operated by firms whose major businesses are end products.)

Carter C. Higgins, president and general manager, Worcester Pressed Steel Co., Worcester, Mass., puts it this way: "Four or five years ago, new captive stamping departments were being established. We feel this trend has reversed itself. I know of a number of captive operations which have been eliminated. This is not true, however, in the automotive field where the job stamper is at a disadvantage because he can't plan far enough ahead to be able to afford specialized automation equipment."

E. J. Skramstad, president, Federal Tool & Mfg. Co., Minneapolis, adds: "The job stampers are in a better position (than captives) today because they do business with many fields. When one is down, another is up and a uniform level is maintained. Captives make only one product. When sales are down and inventories build up, it is necessary to curtail production."

Prices Are Firm—In spite of, or perhaps because of, the deep cutback in orders this year, prices are about even with last year's. It hasn't been easy. One manufacturer says: "Prices have been maintained at 1957's levels despite declines in business and a 4.5 per cent increase in wages. Competition coupled with

customer insistence made this mandatory."

Prices may not be stable much longer. Mr. Higgins explains: "If steel goes up, we shall have to do what we can to pass the increase along to customers. What will happen to our labor rates, we can't say."

Take Your Choice—How important is the auto industry to the stamping industry as a whole? Ask 25 stampers that question and you'll get 25 different answers.

Typical: "Let's face facts. We eat or starve depending on the health of the auto industry."

"The auto industry is lessening in importance as far as stampers are concerned."

"We have a stable business without doing any automotive work."

Conclusion: The auto industry, while not of life and death importance to stampers, is a bellwether of the industry. Though many may deny dependence on autodom, stampers' activity can be predicted with considerable accuracy by watching the automakers.

What's Happening—Stampers are down, but they're still fighting. Some are winning the scrap. Acme Stamping & Mfg. Co., Pittsburgh, reports its sales are better than those a year ago because of "a change in management and greater sales effort." Three salesmen are on the road (none last year) and direct mail is being used for the first time.

A salesman for Dayton Rogers Mfg. Co., Minneapolis, reports a heavy increase in the number of inquiries. His opinion: Fabricators are trying to switch to short run stampers to cut costs (short run stampers like Dayton Rogers can charge less than production shops because their dies require less precision).

Industry Prediction — Most executives feel no upswing will be evident until early in the fourth quarter. They add they don't expect real relief until after the first of the year.

All executives questioned indicate they expect 1959 to be substantially better than 1958. Most expect next year to meet 1957's figures.

Sheets, Strip . . .

Sheet & Strip Prices, Pages 116 & 117

Miscellaneous manufacturing demand for hot and cold rolled sheets is a little better than it was. Some orders reflect hedge buying against an expected price hike at midyear. But such protective covering, so far, is disappointing to sheet salesmen who have been talking up the price angle for weeks. Consumers haven't shown too much concern. In any case, they'll have to act soon if they are to get in tonnage before leadtime expires.

Generally, it is thought sheet prices will rise no more than $4 a ton. That's substantially less than the indicated boost in wage costs.

In the East, the slight improvement in demand over recent weeks has carried into June. Heavier volume is from smaller miscellaneous consumers who are including July tonnage in their June commitments. Most orders call for prompt shipments.

The rush for last minute tonnage to complete 1958 model auto runs is dying down. Next month should see some quick dashes into and out of the market at Detroit as inventories are adjusted prior to the ending of the 1958 model runs.

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7747 Van Buren Street **ABELL-HOWE COMPANY** Forest Park, Illinois

There has been no significant pickup in sheet orders at Pittsburgh, but district mills sold more tonnage in May than in April. One producer's May sales of cold rolled topped those of any previous month this year. Additional gains are expected this month.

Orders from automotive, electrical equipment, and home appliance industries are spotty.

Galvanized sheets continue their strong seasonal performance. Most producers are reported operating around 80 per cent of capacity.

Stainless Steel . . .

Stainless Steel Prices, Page 119

Apollo Metal Works, Dept. SLC, Chicago, recently announced No. 3 and 4 finishes can now be supplied in high production runs on 72 in. wide, stainless steel sheets and plates at lengths up to 20 ft. The materials are used in fabricating large shells and seamless casings, as well as in architectural applications.

Tubular Goods . . .

Tubular Goods Prices, Page 119

The market outlook for oil country goods appears a little better. Sellers have a little optimism for the weeks immediately ahead. A Pittsburgh producer says May sales weren't stimulating, but "June may be a lot better, and if the present trend continues, our sales might jump 20 to 25 per cent."

At Detroit, a seller thinks demand will pick up soon. It reports definite promises of June buying for third quarter delivery. Indications are that second half sales of oil country goods will better those in first half by a good margin. July volume may be off, though, because of vacations, and possibly because of price hedging this month.

Some pipe distributors have reduced inventories to the point they may have to begin restocking soon. Some of them may order for June shipment to beat the expected July 1 price hike.

Most orders for oil country goods are originating with small companies. They're buying tubing and casing from distributors. Drill pipe sales continue depressed. Contractors are pirating pipe from idle rigs. When oil production restrictions are eased, they'll need a lot of pipe in a hurry.

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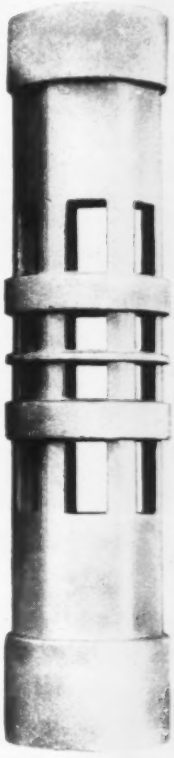

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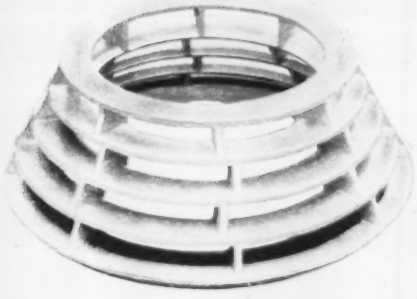

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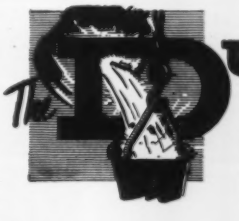

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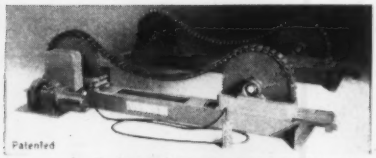
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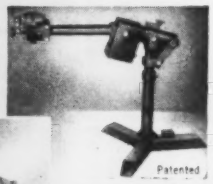
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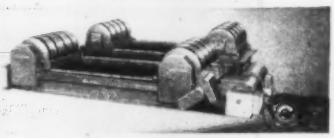
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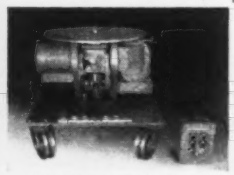
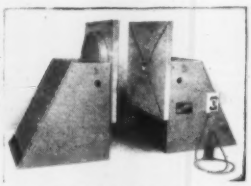
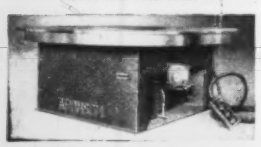
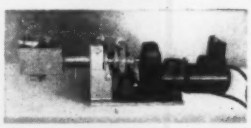

Model D Gear Driven Positioners. Compact. Precise. Rugged. Capacities to 1000 lbs.


Rugged Head and Tail Stock for positioning bulky weldments between centers. Table Backup for Zero Deflection. Magnetic Braking. Capacities to 160,000 lbs. Geared Elevation Optional.


Heavy Duty Floor Turntables with precision speed control and Magnetic Braking, used for welding, burning, X-raying, etc. Capacities to 120,000 lbs., various heights and speeds.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New Bulletin No. 47, describes DIAMONTEX Perforated Metal Lay-in Panels for Modern Acoustical Ceilings.

Pressure and mechanical tubing demand reflects no attempt to beat the expected price increase. But a Detroit seller says June orders are at least 10 per cent heavier than May's, and it says the auto people indicate they'll be actively in the market for tubing in July and August.

Custom production to individual specifications of thin wall, welded metal tubing was announced by Universal Tube Corp., Chicago.

Wire . . .

Wire Prices, Pages 117 & 118

No substantial improvement in demand for wire and wire products is expected until late third quarter. Automotive buying continues slack, leaving a wide gap in demand that's not being filled by other industrial consumers. That includes manufacturers of screws and fasteners, springs, stitching wire, and valve springs.

Heading wire demand is spotty. So is that for upholstery coils. Wire needed for construction is moderately active, highway mesh and prestressed strand moving fairly well. June bookings are slightly ahead of May's.

There is little price-hedge buying, but some consumers are including July requirements in their June commitments.

Steel Bars . . .

Bar Prices, Page 115

Carbon and alloy bars are not sharing in the mild improvement shown by other major steel products in the East. Low consumption and substantial inventories are reflected. But inventories are large only in light of restricted consumption in most cases.

Buying includes small orders for prompt shipment, and not much pickup is expected until late third quarter. Automotive volume is being banked upon to bolster demand late in the summer. Screw machine requirements are spotty.

A Pittsburgh producer of hot bars says: "May is winding up better than we anticipated." Within the last few days, he has booked orders from Chicago, Detroit, and Pittsburgh. Most of the business was from makers of farm implements and such items as bicycles.

The General Stores Supply Of-

fice, Navy, Philadelphia, closes June 11 and 13 on large tonnage requirements of hot and cold finished carbon bars for third quarter. The inquiry includes flats, hull rivet rods, and alloy bars.

Reinforcing Bars . . .

Reinforcing Bar Prices, Page 115

The seasonal upswing in construction activities is stimulating a noticably stronger demand for construction steel products, such as reinforcing bars, joists, and mesh. In some instances, buyers are seeking to beat an expected midyear price increase.

Reinforcing wire fabric orders are coming in faster as road contracts are signed throughout the country. It now looks as though there will be a 10 to 15 per cent pickup in orders this month for July shipment.

Plates . . .

Plate Prices, Page 115

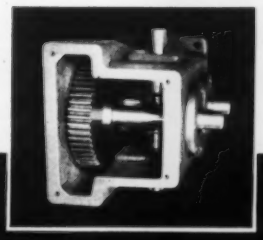
Although most plate consumers expect prices to rise at midyear, most of them are disinclined to stock up.

Says one Pittsburgh fabricator: "We've dropped our inventory considerably, but we're not going to rebuild it just to beat a price increase. A year ago, we might have done so. More contracts were being let then, and we could get better prices for our work."

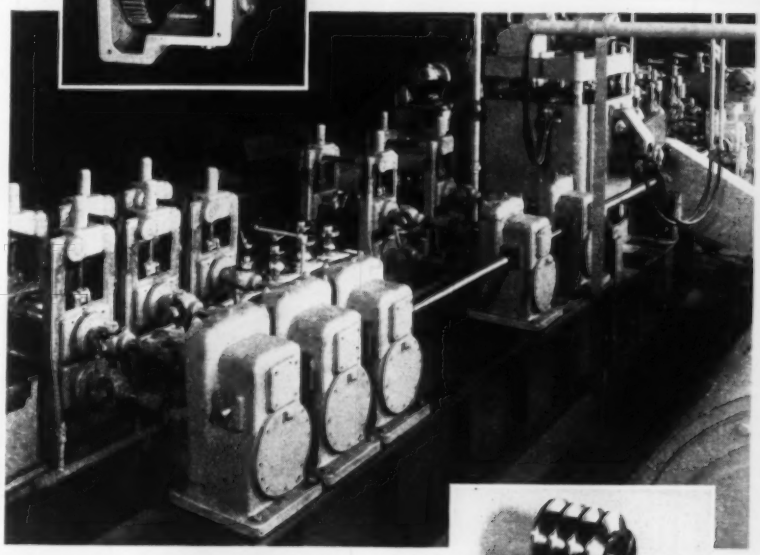
So long as they can get four-week delivery, fabricators are unconcerned about low inventories. They figure scrap losses and interest costs would more than offset what they might gain by hedging against higher prices.

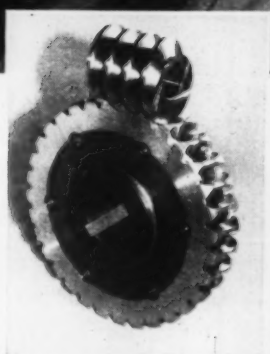
One eastern plate mill is filled for June and into July on alloy plates, but most producers have openings in June schedules on carbon grades. Except for shipyard and tank volume, demand appears to be contracting, though May bookings topped those in April. A slight pickup in stock orders is expected in the East this month, indicating some price hedging.

Introduction one month ahead of schedule of its line of welding electrodes is announced by Lukens Steel Co., Coatesville, Pa. Introduction of its "Plate-Mate" makes Lukens the first steelmaker to offer both its own range of plates and its own



Open view of drive unit shown below on machine.





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line of matching electrodes, made to its specifications.

Structural Shapes . . .

Structural Shape Prices, Page 115

Structural fabricators are placing more steel orders with the mills. Not only are their orders heavier, but their schedules are the highest so far this year in the East. The bulge in demand stems from: 1. Depleted shop inventories. 2. Heavier bookings. 3. Covering against contracts for more needed sizes before a July 1 price increase.

The increase in tonnage in the East is confined largely to bridge requirements. Industrial estimating continues light, and commercial building volume is barely holding. Public work, including schools, is gaining momentum. Three New York State bridge projects will take 36,000 tons.

Prices for fabricated structurals are slow to regain the ground lost in recent months due to stiffer competitive bidding.

Warehouse . . .

Warehouse Prices, Page 120

Distributors in most districts report their orders for inventory replacement have been stepped up. The upward trend began in April, continued in May, and is expected to hit a peak in June.

Receipts of orders from fabricators have shown some improvement but are still below earlier estimates. The consensus is that a substantial improvement in demand will not materialize until fall.

The competitive situation has led to a widespread practice of price shopping by users. As a result, some price cutting has developed. Imports are meeting the stronger domestic competition and continue to make inroads on the markets, especially in the south, southwest, and coastal cities. Many municipalities in the Houston area have barred foreign material in public work projects.

Pig Iron . . .

Pig Iron Prices, Page 120

Pig iron production has reversed its trend as mills are beginning to relight blast furnaces to meet heavier demands from their steelmaking departments.

The merchant iron market remains dull due to slow operations at most foundries. Movement of iron is expected to remain slow throughout the summer, improving gradually in the final four months of the year.

Solvent Price Reduced

Dow Chemical Co., Midland, Mich., last week reduced the price on Chlorothene, a solvent, 1 cent to 0.1375 cent per pound in tank car quantities. The move is said to be due to volume production.

Blast Furnace Output Off

Blast furnace production (pig iron, ferromanganese, and spiegeleisen) in April totaled 3,827,209 net tons, reports the American Iron & Steel Institute. Comparisons: 4,463,953 in the preceding month and 6,870,886 in the corresponding month a year ago.

Output of ferromanganese and spiegeleisen in April was 39,302 net tons, vs. 45,175 tons in March and 60,870,886 in April, 1957.

Production in the first four months of this year totaled 17,208,541 net tons of which 200,392 tons were ferroalloys. In the like period last year, output was 28,056,641 tons, of which 263,362 were ferroalloys.

Production by states:

Pig Iron Production—April, 1958
(Net tons)

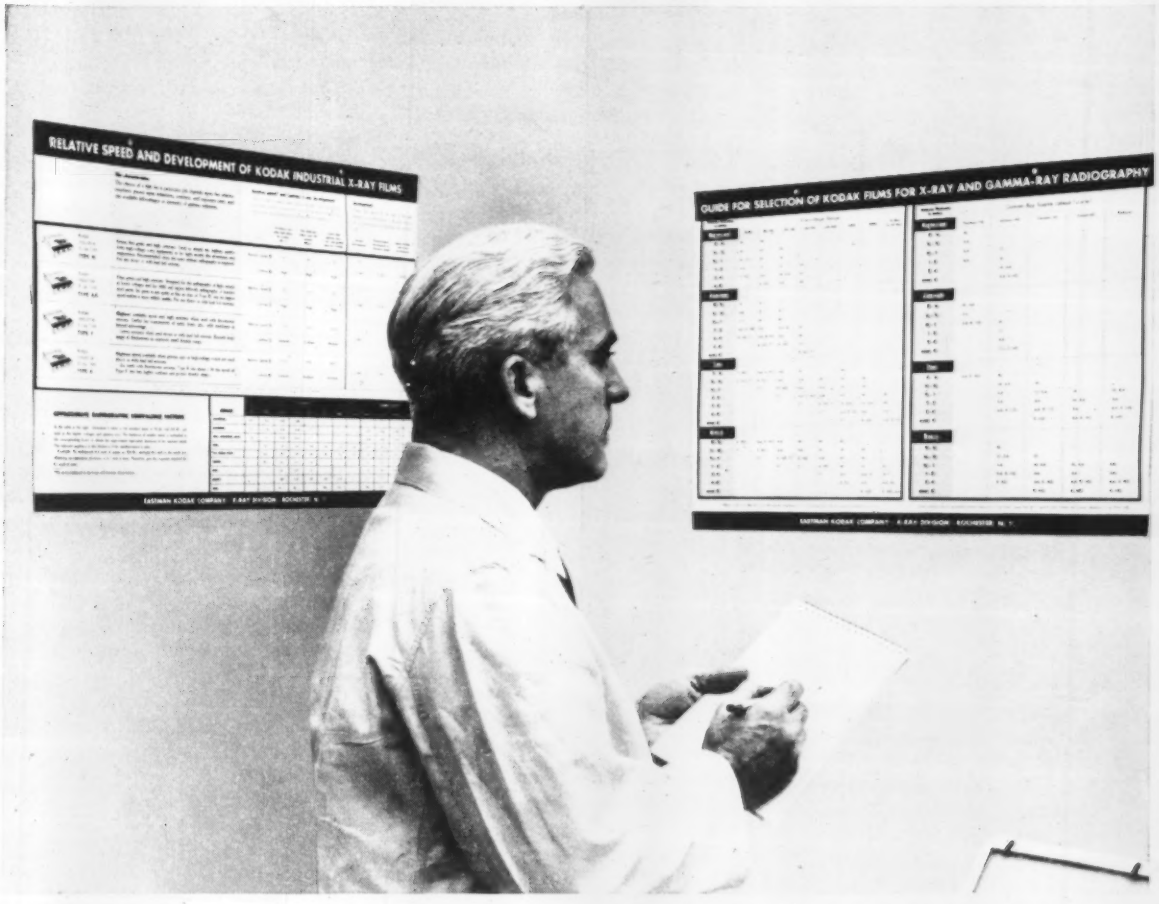
States:	April	First Four Months
Massachusetts & New York	223,586	1,236,649
Pennsylvania	1,056,335	4,615,613
Maryland, Virginia & W. Virginia	449,062	1,896,818
Kentucky, Tennessee, Texas	114,467	499,858
Alabama	438,100	1,759,389
Ohio	432,403	2,035,615
Indiana	512,288	2,260,119
Michigan, Minnesota	93,168	776,098
Colorado, Utah, California	252,559	1,032,715
*Total	3,827,209	17,208,541

*Includes ferromanganese and spiegeleisen.
Data from American Iron & Steel Institute.

Metallurgical Coke . . .

Metallurgical Coke Prices, Page 122

Production of coke totaled 4,340,634 net tons in March (4,301,831 oven, 38,803 beehive), reports the U. S. Bureau of Mines. In the preceding month, output was 4,078,728 tons (4,041,122 oven, 37,606 beehive). In March a year ago, the total was 6,895,077 tons (6,631,662 oven, 263,415 beehive).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GUIDE FOR SELECTION OF KODAK FILMS FOR X-RAY AND GAMMA-RAY RADIOGRAPHY

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TRADE MARK

Stocks of oven coke held by producers at the end of March were 3,478,465 net tons, equal to 25.1 days' output. In February, the total was 3,347,045 tons, or 23.2 days, and at the end of March, 1957, it was 2,108,147 tons, or 9.9 days.

Semifinished Steel . . .

Semifinished Prices, Page 115

For the fifth consecutive week, the national ingot rate last week advanced, rising another 2 points to 56.5 per cent of capacity, the highest level since January. Tonnage was estimated at 1,526,000 for the week. In the last five weeks the rate has climbed almost 10 points.

Advances were scored in most districts last week. The upturn at Buffalo has reversed the downturn in steel employment in that area. Bethlehem Steel has called back several hundred workmen.

Lone Star Steel Co., Dallas, is recalling 1000 of its 1500 idle workmen to fill orders for oil line pipe. The company called back more than 300 in the rolling mill department of its Daingerfield plant in East Texas June 1. The remainder will be recalled on June 15 and 16 to man two electricweld pipe mills.

E. B. Germany, president, said the company has a number of orders on hand for line pipe — the reason that crews are being called back in the rolling mill and pipe mill departments. The company will be forced to curtail when the orders are filled unless new tonnage is booked.

April Steel Output Down

Steel output in April was 5,532,991 net tons—5,139,008 tons were carbon steel; 337,754 tons were alloy; and 56,229 tons were stainless, reports the American Iron & Steel Institute. In the first four months of this year, production amounted to 24,323,848 tons: 22,362,881, carbon; 1,725,037, alloy; and 235,930, stainless.

April output a year ago totaled 9,814,780 tons, of which 771,438 tons were alloy, including stainless. Production in the first four months of 1957 was 41,399,822 tons, including 3,369,382 tons of alloy and stainless.

Production by states:

Steel Production—April, 1958
(Net tons)

States:	April	First Four Months
Mass., R.I., & Conn.	14,919	71,611
New York	250,589	1,127,160
Pennsylvania	1,441,818	6,337,889
New Jersey, Del., Md.	463,191	1,931,224
Va., W. Va., Ky., Tenn.	279,882	1,068,678
Georgia, Ala., Miss.	284,400	1,069,216
Ohio	788,444	3,761,427
Indiana	813,062	3,478,530
Illinois	470,615	1,930,752
Michigan, Minnesota	132,284	1,125,933
Mo., Okla., Tex., Colo.	240,483	993,354
Utah, Washington, Oregon	155,842	649,184
California	197,462	778,890

Steel Product Shipments—March, 1958

(Net tons, all grades)

Products	Carbon	Alloy	Stainless	Total First Three Months 1958	1957
Ingots, etc.	10,527	11,374	2,071	72,622	129,864
Blooms, slabs, etc.	82,819	23,201	1,319	314,879	687,906
Tube rounds	443	260	2	2,008	25,734
Skelp	8,377	.....	.....	19,889	56,771
Wire rods	64,844	1,079	519	189,857	272,050
Structurals (heavy)	281,372	3,054	35	1,004,246	1,677,696
Steel piling	32,058	.....	.....	91,913	145,730
Plates	434,893	33,567	2,297	1,429,145	2,421,479
Rails (standard)	51,053	.....	.....	146,839	357,920
Rails (all other)	2,847	.....	.....	9,251	23,585
Joint bars	5,180	.....	.....	11,494	23,389
Tie plates	13,337	.....	.....	33,796	86,301
Track spikes	5,070	.....	.....	11,515	21,148
Wheels	15,501	42	.....	56,168	97,886
Axles	8,024	25	.....	32,474	53,574
Bars (hot rolled)	320,298	76,237	2,597	1,252,928	2,283,029
Bars (reinforcing)	141,130	.....	.....	365,933	698,858
Bars (cold drawn)	65,179	10,813	3,529	243,316	399,260
Tool steel	727	5,068	.....	17,973	28,771
Standard pipe	147,099	38	2	452,435	771,527
Oil country goods	49,785	17,431	.....	315,746	808,407
Line pipe	173,720	.....	.....	605,294	1,036,208
Mechanical tubing	30,542	12,626	270	135,958	239,086
Pressure tubing	17,934	3,624	1,208	68,158	119,869
Drawn wire	174,104	2,419	1,698	513,699	695,795
Nails & staples	33,528	.....	1	93,857	117,957
Barbed wire	6,860	.....	.....	16,060	19,554
Woven fence	18,414	.....	.....	47,455	67,025
Bale ties, etc.	3,383	.....	.....	6,692	12,574
Black plate	59,927	.....	.....	161,141	203,730
Tin & terne plate (hot dipped)	36,794	.....	.....	97,700	264,807
Tin plate (electrolytic)	419,102	.....	.....	1,291,322	1,518,337
Sheets (hot rolled)	396,524	17,455	1,683	1,360,706	2,330,340
Sheets (cold rolled)	699,012	2,844	7,839	2,285,106	3,341,100
Sheets (galvanized)	195,885	.....	.....	550,161	647,780
Sheets (other coated)	12,570	.....	.....	41,074	55,195
Electrical sheets & strip	3,362	34,837	.....	112,258	183,720
Strip (hot rolled)	71,319	1,435	450	222,316	427,987
Strip (cold rolled)	60,063	2,137	9,834	245,291	337,532
Total (1958)	4,153,606	259,566	35,354	13,928,675	.....
Total (1957)	7,307,091	452,870	61,655	.....	22,689,781

Data from American Iron & Steel Institute.

DISTRICT INGOT RATES

(Percentage of Capacity Engaged)

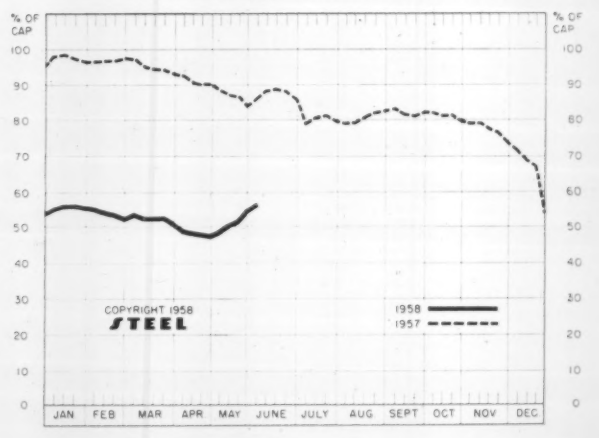
	Week Ended June 1	Change	Same Week 1957	1956
Pittsburgh	54	+ 1*	88.5	98
Chicago	63	+ 3	89.5	100.5
Mid-Atlantic	49	0	94	98
Youngstown	45	0	70	101
Wheeling	73.5	0	81.5	100.5
Cleveland	33.5	+ 1.5*	87	95.5
Buffalo	46.5	+ 2.5	95	105
Birmingham	66.5	— 0.5	92.5	23.5
New England	40	0	56	89
Cincinnati	59.5	— 2.5	85	96
St. Louis	87.5	+ 8.5	90	96.5
Detroit	52	+ 4.5*	87	96
Western	75	+ 8	100	107
National Rate	56.5	+ 2	86	96.5

INGOT PRODUCTION‡

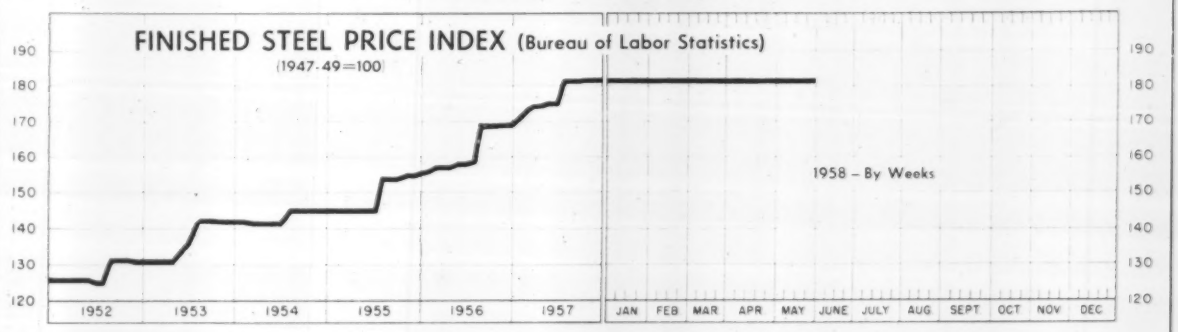
	Week Ended June 1	Week Ago	Month Ago	Year Ago
INDEX (1947-49=100)	95.0†	94.8	80.2	140.2
NET TONS (In thousands)	1,526†	1,523	1,289	2,252

*Change from preceding week's revised rate. †Estimated. ‡American Iron & Steel Institute. Weekly capacity (net tons): 2,699,173 in 1958; 2,559,490 in 1957; 2,461,893 in 1956.

NATIONAL STEELWORKS OPERATIONS



Price Indexes and Composites



181.7	181.7	181.6	181.7	174.4
May 27, 1958	Week Ago	Month Ago	May Avg	Year Ago

AVERAGE PRICES OF STEEL (Bureau of Labor Statistics)

Week Ended May 27

Prices include mill base prices and typical extras and deductions. Units are 100 lb except where otherwise noted in parentheses. For complete description of the following products and extras and deductions applicable to them, write to STEEL.

Rails, Standard No. 1	$5.600	Bars, Reinforcing	6.135
Rails, Light, 40 lb	7.067	Bars, C.F., Carbon	10.360
Tie Plates	6.600	Bars, C.F., Alloy	13.875
Axles, Railway	9.825	Bars, C.F., Stainless, 302 (lb)	0.553
Wheels, Freight Car, 33 in. (per wheel)	60.000	Sheets, H.R., Carbon	6.192
Plates, Carbon	6.150	Sheets, C.R., Carbon	7.089
Structural Shapes	5.942	Sheets, Galvanized	8.270
Bars, Tool Steel, Carbon (lb)	0.535	Sheets, C.R., Stainless, 302 (lb)	0.688
Bars, Tool Steel, Alloy, Oil Hardening Die (lb)	0.650	Sheets, Electrical	12.025
Bars, Tool Steel, H.R., Alloy, High Speed, W 6.75, Cr 4.5, V 2.1, Mo 5.5, C 0.60 (lb)	1.355	Strip, C.R., Carbon	9.243
Bars, Tool Steel, H.R., Alloy, High Speed, W18, Cr 4, V 1 (lb)	1.850	Strip, C.R., Stainless, 430 (lb)	0.493
Bars, H.R., Alloy	10.525	Strip, H.R., Carbon	6.095
Bars, H.R., Stainless, 303 (lb)	0.525	Pipe, Black, Buttweld (100 ft)	19.814
Bars, H.R., Carbon	6.425	Pipe, Galv., Buttweld (100 ft)	23.264
		Pipe, Line (100 ft)	199.023
		Casing, Oil Well, Carbon (100 ft)	194.499
		Casing, Oil Well, Alloy (100 ft)	304.610
		Tubes, Boiler (100 ft)	49.130
		Tubing, Mechanical, Carbon (100 ft)	24.953
		Tubing, Mechanical, Stainless, 304 (100 ft)	205.608
		Tin Plate, Hot-dipped, 1.25 lb (95 lb base box)	9.783
		Tin Plate, Electrolytic, 0.25 lb (95 lb base box)	8.483
		Black Plate, Canmaking Quality (95 lb base box)	7.583
		Wire, Drawn, Carbon	10.225
		Wire, Drawn, Stainless, 430 (lb)	0.653
		Bale Ties (bundles)	7.967
		Nails, Wire, 8d Common	9.828
		Wire, Barbed (80-rod spool)	8.719
		Woven Wire Fence (20-rod roll)	21.737

STEEL's FINISHED STEEL PRICE INDEX*

	May 28 1958	Week Ago	Month Ago	Year Ago	5 Yr Ago
Index (1935-39 avg—100)	239.15	239.15	239.15	228.59	182.82
Index in cents per lb	6.479	6.479	6.479	6.193	4.953

STEEL's ARITHMETICAL PRICE COMPOSITES*

Finished Steel, NT	$145.42	$145.42	$145.42	$140.24	$111.28
No. 2 Fdry Pig Iron, GT	66.49	66.49	66.49	64.70	55.04
Basic Pig Iron, GT	65.99	65.99	65.99	64.23	54.66
Malleable Pig Iron, GT	67.27	67.27	67.27	65.77	55.77
Steelmaking Scrap, GT	34.50	33.50	31.83	47.00	39.17

*For explanation of weighted index see STEEL, Sept. 19, 1949, p. 54; of arithmetical price composite, STEEL, Sept. 1, 1952, p. 130.

Comparison of Prices

Comparative prices by districts, in cents per pound except as otherwise noted. Delivered prices based on nearest production point.

FINISHED STEEL	May 28 1958	Week Ago	Month Ago	Year Ago	5 Yr Ago
Bars, H.R., Pittsburgh	5.425	5.425	5.425	5.075	3.95
Bars, H.R., Chicago	5.425	5.425	5.425	5.075	3.95
Bars, H.R., deld. Philadelphia	5.725	5.725	5.725	5.365	4.502
Bars, C.F., Pittsburgh	7.30*	7.30*	7.30*	6.85*	4.925
Shapes, Std., Pittsburgh	5.275	5.275	5.275	5.00	3.85
Shapes, Std., Chicago	5.275	5.275	5.275	5.00	3.85
Shapes, deld. Philadelphia	5.545	5.545	5.545	5.31	4.13
Plates, Pittsburgh	5.10	5.10	5.10	4.85	3.90
Plates, Chicago	5.10	5.10	5.10	4.85	3.90
Plates, Coatesville, Pa.	5.10	5.10	5.10	5.25	4.35
Plates, Sparrows Point, Md.	5.10	5.10	5.10	4.85	3.90
Plates, Claymont, Del.	5.10	5.10	5.10	5.70	4.35
Sheets, H.R., Pittsburgh	4.925	4.925	4.925	4.675	3.775
Sheets, H.R., Chicago	4.925	4.925	4.925	4.675	3.775
Sheets, C.R., Pittsburgh	6.05	6.05	6.05	5.75	4.575
Sheets, C.R., Chicago	6.05	6.05	6.05	5.75	4.575
Sheets, C.R., Detroit	6.05-6.15	6.05-6.15	6.05-6.15	5.75-5.85	4.775
Sheets, Galv., Pittsburgh	6.60	6.60	6.60	6.30	5.075
Strip, H.R., Pittsburgh	4.925	4.925	4.925	4.675	3.975-4.225
Strip, H.R., Chicago	4.925	4.925	4.925	4.675	3.725
Strip, C.R., Pittsburgh	7.15	7.15	7.15	6.85	5.10-5.80
Strip, C.R., Chicago	7.15	7.15	7.15	6.85	5.35
Strip, C.R., Detroit	7.25	7.25	7.25	6.95	5.30-6.05
Wire, Basic, Pittsburgh	7.65	7.65	7.65	7.20	5.225-5.475
Nails, Wire, Pittsburgh	8.95	8.95	8.95	8.49	6.35
Tin plate (1.50 lb) box, Pitts.	$10.30	$10.30	$10.30	$10.30	$8.95

*Including 0.35c for special quality.

SEMIFINISHED STEEL					
Billets, forging, Pitts. (NT)	$96.00	$96.00	$96.00	$91.50	$70.50
Wire rods, $\frac{7}{32}$-$\frac{9}{32}$" Pitts.	6.15	6.15	6.15	5.80	4.425

PIG IRON, Gross Ton	May 28 1958	Week Ago	Month Ago	Year Ago	5 Yr Ago
Bessemer, Pitts.	$67.00	$67.00	$67.00	$65.50	$55.50
Basic, Valley	66.00	66.00	66.00	64.50	54.50
Basic, deld., Phila.	70.41	70.41	70.41	68.38	59.25
No. 2 Fdry, NevilleIsland,Pa.	66.50	66.50	66.50	65.00	55.00
No. 2 Fdry, Chicago	66.50	66.50	66.50	65.00	55.00
No. 2 Fdry, deld., Phila.	70.91	70.91	70.91	68.88	59.75
No. 2 Fdry, Birm.	62.50	62.50	62.50	59.00	51.38
No. 2 Fdry (Birm.) deld. Cin.	70.20	70.20	70.20	66.70	58.93
Malleable, Valley	66.50	66.50	66.50	65.00	55.00
Malleable, Chicago	66.50	66.50	66.50	65.00	55.00
Ferromanganese, net ton	245.00†	245.00†	245.00†	255.00†	200.00*

†74-76% Mn, Duquesne, Pa. *Etna, Pa.

SCRAP, Gross Ton (Including broker's commission)					
No. 1 Heavy Melt, Pittsburgh	$34.50	$32.50	$31.50	$46.50	$39.50
No. 1 Heavy Melt, E. Pa.	34.50	34.50	34.50	52.00	41.50
No. 1 Heavy Melt, Chicago	34.50	33.50	29.50	42.50	36.50
No. 1 Heavy Melt, Valley	36.50	36.50	32.50	48.50	41.50
No. 1 Heavy Melt, Cleve.	33.00	33.00	29.50	45.50	39.00
No. 1 Heavy Melt, Buffalo	26.50	26.50	26.50	40.50	40.75
Rails, Rerolling, Chicago	53.50	51.50	48.50	61.50	47.50
No. 1 Cast, Chicago	41.50	40.50	38.50	42.50	39.00

COKE, Net Ton					
Beehive, Furn., Connisvl.	$15.25	$15.25	$15.25	$15.25	$14.75
Beehive, Fdry., Connisvl.	18.25	18.25	18.25	18.00	17.00

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We put in a call for our State Savings Bond Director. He sparked a company-wide plan that told our people about systematic buying of U.S. Savings Bonds. Every person on our payroll received an application card.

Within days we had the best employee participation we've enjoyed since the mid-forties. It showed that people welcome a chance to set up this soundest of investment plans. Today there are more payroll savers than ever before in peace time. Look up your State Director in the phone book or write: Savings Bonds Division, U.S. Treasury Dept., Washington, D. C.

STEEL
The Metalworking Weekly

THE U. S. GOVERNMENT DOES NOT PAY FOR THIS ADVERTISEMENT. THE TREASURY DEPARTMENT THANKS, FOR THEIR PATRIOTISM, THE ADVERTISING COUNCIL AND THE DONOR ABOVE

Steel Prices

Mill prices as reported to STEEL, May 28, cents per pound except as otherwise noted. *Changes shown in italics.* Code numbers following mill points indicate producing company. Key to producers, page 116; to footnotes, page 118.

SEMIFINISHED

INGOTS, Carbon, Forging (NT)
Munhall,Pa. U5 ....$73.50

INGOTS, Alloy (NT)
Detroit S41 ....$77.00
Farrell,Pa. S3 ....77.00
Lowellville, O. S3 ....77.00
Midland,Pa. C18 ....77.00
Munhall,Pa. U5 ....77.00
Sharon,Pa. S3 ....77.00

BILLETS, BLOOMS & SLABS
Carbon, Rerolling (NT)
Bessemer,Pa. U5 ....$77.50
Buffalo R2 ....77.50
Clairton,Pa. U5 ....77.50
Ensley,Ala. T2 ....77.50
Fairfield,Ala. T2 ....77.50
Fontana,Calif. K1 ....88.00
Gary,Ind. U5 ....77.50
Johnstown,Pa. B3 ....77.50
Lackawanna,N.Y. B2 ....77.50
Munhall,Pa. U5 ....77.50
Owensboro,Ky. G8 ....77.50
S.Chicago,Ill. R2, U5 ....77.50
S.Duquesne,Pa. U5 ....77.50
Sterling,Ill. N15 ....77.50
Youngstown R2 ....77.50

Carbon, Forging (NT)
Bessemer,Pa. U5 ....$96.00
Buffalo R2 ....96.00
Canton,O. R2 ....98.50
Clairton,Pa. U5 ....96.00
Conshohocken,Pa. A3 ..101.00
Ensley,Ala. T2 ....96.00
Fairfield,Ala. T2 ....96.00
Fontana,Calif. K1 ....105.50
Gary,Ind. U5 ....96.00
Geneva,Utah C11 ....96.00
Houston S5 ....101.00
Johnstown,Pa. B2 ....96.00
Lackawanna,N.Y. B2 ..96.00
Los Angeles B3 ....105.50
Midland,Pa. C18 ....96.00
Munhall,Pa. U5 ....96.00
Owensboro,Ky. G8 ....96.00
Seattle B3 ....109.50
Sharon,Pa. S3 ....96.00
S.Chicago R2, U5 W14..96.00
S.Duquesne,Pa. U5 ..96.00
S.SanFrancisco B3 ..105.50
Warren,O. C17 ....96.00

Alloy, Forging (NT)
Bethlehem,Pa. B2 ..$114.00
Bridgeport,Conn. C32..114.00
Buffalo R2 ....114.00
Canton,O. R2, T7 ....114.00
Conshohocken,Pa. A3 ..121.00
Detroit S41 ....114.00
Economy,Pa. B14 ....114.00
Farrell,Pa. S3 ....114.00
Fontana,Calif. K1 ....135.00
Gary,Ind. U5 ....114.00
Houston S5 ....119.00
Ind.Harbor,Ind. Y1 ..114.00
Johnstown,Pa. B2 ....114.00
Lackawanna,N.Y. B2..114.00
LosAngeles B3 ....134.00
Lowellville,O. S3 ....114.00
Massillon,O. R2 ....114.00
Midland,Pa. C18 ....114.00
Munhall,Pa. U5 ....114.00
Owensboro,Ky. G8 ....114.00
Sharon,Pa. S3 ....114.00
S.Chicago R2,U5,W14 .114.00
S.Duquesne,Pa. U5 ..114.00
Struthers,O. Y1 ....114.00
Warren,O. C17 ....114.00

ROUNDS, SEAMLESS TUBE (NT)
Buffalo R2 ....$117.50
Canton,O. R2 ....120.00
Cleveland R2 ....117.50
Gary,Ind. U5 ....117.50
S.Chicago,Ill. R2, W14 117.50
S.Duquesne,Pa. U5 ...117.50
Warren,O. C17 ....117.50

SKELP
Aliquippa,Pa. J5 ....5.075
Munhall,Pa. U5 ....4.875
Pittsburgh J5 ....5.075
Warren,O. R2 ....4.875
Youngstown R2, U5 ..4.875

WIRE RODS
AlabamaCity,Ala. R2 ...6.15
Aliquippa,Pa. J5 ....6.15
Alton,Ill. L1 ....6.35
Buffalo W12 ....6.15
Cleveland A7 ....6.15
Donora,Pa. A7 ....6.15
Fairfield,Ala. T2 ....6.15
Houston S5 ....6.40
IndianaHarbor,Ind. Y1 ..6.15
Johnstown,Pa. B2 ....6.15
Joliet,Ill. A7 ....6.15
KansasCity,Mo. S5 ....6.40
Kokomo,Ind. C16 ....6.25
LosAngeles B3 ....6.95
Minnequa,Colo. C10 ....6.40
Monessen,Pa. P7 ....6.15
N.Tonawanda,N. Y. B11..6.15
Pittsburg,Calif. C11 ...6.95
Portsmouth,O. P12 ....6.15
Roebling,N.J. R5 ....6.25
S.Chicago,Ill. R2 ....6.15
SparrowsPoint,Md. B2..6.25
Sterling,Ill.(1) N15 ....6.15
Sterling,Ill. N15 ....6.25
Struthers,O. Y1 ....6.15
Worcester,Mass. A7 ....6.45

STRUCTURALS

Carbon Steel Std. Shapes
AlabamaCity,Ala. R2 ..5.275
Atlanta A11 ....5.475
Aliquippa,Pa. J5 ....5.275
Bessemer,Ala. T2 ....5.275
Bethlehem,Pa. B2 ....5.325
Birmingham C15 ....5.275
Clairton,Pa. U5 ....5.275
Fairfield,Ala. T2 ....5.275
Fontana,Calif. K1 ....6.075
Gary,Ind. U5 ....5.275
Geneva,Utah C11 ....5.275
Houston S5 ....5.375
Ind.Harbor,Ind. I-2 ..5.275
Johnstown,Pa. B2 ....5.325
Joliet,Ill. P22 ....5.275
KansasCity,Mo. S5 ....5.375
Lackawanna,N.Y. B2 ..5.325
LosAngeles B3 ....5.975
Minnequa,Colo. C10 ...5.575
Munhall,Pa. U5 ....5.275
Niles,Calif. P1 ....5.925
Phoenixville,Pa. P4 ...5.325
Portland,Oreg. O4 ....6.025
Seattle B3 ....6.025
S.Chicago,Ill. U5 W14 5.275
S.SanFrancisco B3 ....5.925
Sterling,Ill. N15 ....5.275
Torrance,Calif. C11 ...5.975
Weirton,W.Va. W6 ....5.275

Wide Flange
Bethlehem,Pa. B2 ....5.325
Clairton,Pa. U5 ....5.275
Fontana,Calif. K1 ....6.225
IndianaHarbor,Ind. I-2..5.275
Lackawanna,N.Y. B2 ..5.325
Munhall,Pa. U5 ....5.275
Phoenixville,Pa. P4 ...5.325
S.Chicago,Ill. U5 ....5.275
Weirton,W.Va. W6 ....5.275

Alloy Std. Shapes
Aliquippa,Pa. J5 ....6.55
Clairton,Pa. U5 ....6.55
Gary,Ind. U5 ....6.55
Houston S5 ....6.65
KansasCity,Mo. S5 ....6.65
Munhall,Pa. U5 ....6.55
S.Chicago,Ill. U5 ....6.55

H.S., L.A. Std. Shapes
Aliquippa,Pa. J5 ....7.75
Bessemer,Ala. T2 ....7.75
Bethlehem,Pa. B2 ....7.80
Clairton,Pa. U5 ....7.75
Fairfield,Ala. T2 ....7.75
Fontana,Calif. K1 ....8.55
Gary,Ind. U5 ....7.75
Geneva,Utah C11 ....7.75
Houston S5 ....7.85
Ind.Harbor,Ind. I-2, Y1 7.75
Johnstown,Pa. B2 ....7.80
KansasCity,Mo. S5 ....7.85
Lackawanna,N.Y. B2 ..7.80
LosAngeles B3 ....8.45
Munhall,Pa. U5 ....7.75
Seattle B3 ....8.50
S.Chicago,Ill. U5, W14..7.75
S.SanFrancisco B3 ....8.40
Struthers,O. Y1 ....7.75

H.S., L.A. Wide Flange
Bethlehem,Pa. B2 ....7.80
Lackawanna,N.Y. B2 ..7.80
Munhall,Pa. U5 ....7.75
S.Chicago,Ill. U5 ....7.75

PILING

BEARING PILES
Bethlehem,Pa. B2 ....5.325
Lackawanna,N.Y. B2 ..5.325
Munhall,Pa. U5 ....5.275
S.Chicago,Ill. U5 ....5.275

STEEL SHEET PILING
Lackawanna,N.Y. B2 ..6.225
Munhall,Pa. U5 ....6.225
S.Chicago,Ill. U5 ....6.225
Weirton,W.Va. W6 ....6.225

PLATES

PLATES, Carbon Steel
AlabamaCity, Ala. R2 ..5.10
Aliquippa,Pa. J5 ....5.10
Ashland,Ky.(15) A10 ....5.10
Atlanta A11 ....5.30
Bessemer,Ala. T2 ....5.10
Clairton,Pa. U5 ....5.10
Claymont,Del. C22 ....5.10
Cleveland J5, R2 ....5.20
Coatesville,Pa. L7 ....5.10
Conshohocken,Pa. A3 ..5.10
Ecorse,Mich. G5 ....5.20
Fairfield,Ala. T2 ....5.10
Fontana,Calif.(30) K1 ..5.90
Gary,Ind. U5 ....5.10
Geneva,Utah C11 ....5.10
GraniteCity,Ill. G4 ....5.30
Harrisburg,Pa. P4 ....5.10
Houston S5 ....5.20
Ind.Harbor,Ind. I-2, Y1..5.10
Johnstown,Pa. B2 ....5.10
Lackawanna,N.Y. B2 ..5.10
LoneStar,Tex. L6 ....5.20
Mansfield,O. E6 ....5.10
Minnequa,Colo. C10 ....5.95
Munhall,Pa. U5 ....5.10
Newport,Ky. A2 ....5.10
Pittsburgh J5 ....5.10
Riverdale,Ill. A1 ....5.10
Seattle B3 ....6.00
Sharon,Pa. S3 ....5.10
S.Chicago,Ill. U5, W14..5.10
SparrowsPoint,Md. B2 ..5.10
Sterling,Ill. N15 ....5.10
Steubenville,O. W10 ....5.10
Warren,O. R2 ....5.10
Youngstown U5, Y1 ....5.10

PLATES, Carbon Abras. Resist.
Claymont,Del. C22 ....6.75
Fontana,Calif. K1 ....7.55
Geneva,Utah C11 ....6.75
Houston S5 ....6.85
Johnstown,Pa. B2 ....6.75
SparrowsPoint,Md. B2 ..6.75

PLATES, Wrought Iron
Economy,Pa. B14 ....13.15

PLATES, H.S., L.A.
Aliquippa,Pa. J5 ....7.625
Bessemer,Ala. T2 ....7.625
Clairton,Pa. U5 ....7.625
Claymont,Del. C22 ....7.625
Cleveland J5, R2 ....7.625
Coatesville,Pa. L7 ....7.625
Conshohocken,Pa. A3 ..7.625
Economy,Pa. B14 ....7.625
Ecorse,Mich. G5 ....7.725
Fairfield,Ala. T2 ....7.625
Farrell,Pa. S3 ....7.625
Fontana,Calif.(30) K1..8.425
Gary,Ind. U5 ....7.625
Geneva,Utah C11 ....7.625
Houston S5 ....7.725
Ind.Harbor,Ind. I-2, Y1..7.625
Johnstown,Pa. B2 ....7.625
Munhall,Pa. U5 ....7.625
Pittsburgh J5 ....7.625
Seattle B3 ....8.525
Sharon,Pa. S3 ....7.625
S.Chicago,Ill. U5, W14 .7.625
SparrowsPoint,Md. B2..7.625
Warren,O. R2 ....7.625
Youngstown U5 ....7.625

PLATES, ALLOY
Aliquippa,Pa. J5 ....7.20
Claymont,Del. C22 ....7.20
Coatesville,Pa. L7 ....7.20
Economy,Pa. B14 ....7.20
Fontana,Calif. K1 ....8.00
Gary,Ind. U5 ....7.20
Houston S5 ....7.30
Ind.Harbor,Ind. Y1 ....7.20
Johnstown,Pa. B2 ....7.20
Lowellville,O. S3 ....7.20
Munhall,Pa. U5 ....7.20
Newport,Ky. A2 ....7.20
Pittsburgh J5 ....7.20
Seattle B3 ....8.10
Sharon,Pa. S3 ....7.20
S.Chicago,Ill. U5, W14..7.20
SparrowsPoint,Md. B2 ..7.20
Youngstown Y1 ....7.20

FLOOR PLATES
Cleveland J5 ....6.175
Conshohocken,Pa. A3 ..6.175
Ind.Harbor,Ind. I-2 ..6.175
Munhall,Pa. U5 ....6.175
S.Chicago,Ill. U5 ....6.175

PLATES, Ingot Iron
Ashland c.l.(15) A10 ..5.35
Ashland l.c.l.(15) A10..5.85
Cleveland c.l. R2 ....5.85
Warren,O. c.l. R2 ....5.85

BARS

BARS, Hot-Rolled Carbon (Merchant Quality)
Ala.City,Ala.(9) R2 ...5.425
Aliquippa,Pa.(9) J5 ...5.425
Alton,Ill. L1 ....5.625
Atlanta(9) A11 ....5.625
Bessemer,Ala.(9) T2 ..5.425
Birmingham(9) C15 ...5.425
Buffalo(9) R2 ....5.425
Clairton,Pa.(9) U5 ....5.425
Cleveland (9) R2 ....5.425
Ecorse,Mich.(9) G5 ....5.525
Emeryville,Calif. J7 ...6.175
Fairfield,Ala.(9) T2 ...5.425
Fairless,Pa.(9) U5 ....5.575
Fontana,Calif.(9) K1 ..6.125
Gary,Ind.(9) U5 ....5.425
Houston(9) S5 ....5.675
Ind.Harbor(9) I-2, Y1..5.425
Johnstown,Pa.(9) B2 ..5.425
Joliet,Ill. P22 ....5.425
KansasCity,Mo.(9) S5..5.675
Lackawanna(9) B2 ....5.425
LosAngeles(9) B3 ....6.125
Midland,Pa.(23) C18 ..5.725
Milton,Pa. M18 ....5.575
Minnequa,Colo. C10 ...5.875
Niles,Calif. P1 ....6.125
N.T'wanda,N.Y.(23)B11..5.775
Owensboro,Ky.(9) G8 ..5.425
Pittsburg,Calif.(9) C11..6.125
Pittsburgh(9) J5 ....5.425
Portland,Oreg. O4 ....6.175
Seattle B3, N14 ....6.175
S.Ch'c'go(9)R2,U5,W14 5.425
S.Duquesne,Pa.(9) U5 ..5.425
S.SanFran.,Calif.(9)B3 6.175
Sterling,Ill.(1)(9) N15..5.425
Sterling,Ill.(9) N15 ...5.525
Struthers,O.(9) Y1 ....5.425
Tonawanda,N.Y. B12 ...5.425
Torrance,Calif.(9) C11 ..6.125
Youngstown(9)R2, U5..5.425

BARS, H.R. Leaded Alloy (Including leaded extra)
Warren,O. C17 ....7.475

BARS, Hot-Rolled Alloy
Aliquippa,Pa. J5 ....6.475
Bethlehem,Pa. B2 ....6.475
Bridgeport,Conn. C32 ...6.55
Buffalo R2 ....6.475
Canton,O. R2, T7 ....6.475
Clairton,Pa. U5 ....6.475
Detroit S41 ....6.475
Economy,Pa. B14 ....6.475
Ecorse,Mich. G5 ....6.575
Fairless,Pa. U5 ....6.625
Farrell,Pa. S3 ....6.475
Fontana,Calif. K1 ....6.525
Gary,Ind. U5 ....6.475
Houston S5 ....6.725
Ind.Harbor,Ind. I-2, Y1..6.475
Johnstown,Pa. B2 ....6.475
KansasCity,Mo. S5 ....6.725
Lackawanna,N.Y. B2 ..6.475
Lowellville,O. S3 ....6.475
LosAngeles B3 ....7.525
Massillon,O. R2 ....6.475
Midland,Pa. C18 ....6.475
Owensboro,Ky. G8 ....6.475
Pittsburgh J5 ....6.475
Sharon,Pa. S3 ....6.475
S.Chicago R2, U5, W14 6.475
S.Duquesne,Pa. U5 ....6.475
Struthers,O. Y1 ....6.475
Warren,O. C17 ....6.475
Youngstown U5 ....6.475

BARS & SMALL SHAPES, H.R. High-Strength, Low-Alloy
Aliquippa,Pa. J5 ....7.925
Bessemer,Ala. T2 ....7.925
Bethlehem,Pa. B2 ....7.925
Clairton,Pa. U5 ....7.925
Cleveland R2 ....7.925
Ecorse,Mich. G5 ....8.025
Fairfield,Ala. T2 ....7.925
Fontana,Calif. K1 ....8.625
Gary,Ind. U5 ....7.925
Houston S5 ....8.175
Ind.Harbor,Ind. Y1 ....7.925
Johnstown,Pa. B2 ....7.925
KansasCity,Mo. S5 ....8.175
Lackawanna,N.Y. B2 ..7.925
LosAngeles B3 ....8.625
Pittsburgh J5 ....7.925
Seattle B3 ....8.675
S.Chicago,Ill. U5, W14..7.925
S.Duquesne,Pa. U5 ....7.925
S.SanFrancisco B3 ....8.675
Struthers,O. Y1 ....7.925
Youngstown U5 ....7.925

BAR SIZE ANGLES; H.R. Carbon
Bethlehem,Pa. (9) B2 ..5.575
Houston(9) S5 ....5.675
KansasCity,Mo.(9) S5..5.675
Lackawanna(9) B2 ....5.425
Sterling,Ill. N15 ....5.525
Sterling,Ill.(1) N15 ...5.425
Tonawanda,N.Y. B12 ...5.425

BAR SIZE ANGLES; S. Shapes
Aliquippa,Pa. J5 ....5.425
Atlanta A11 ....5.625
Joliet,Ill. P22 ....5.425
Niles,Calif. P1 ....6.125
Pittsburgh J5 ....5.425
Portland,Oreg. O4 ....6.175
SanFrancisco S7 ....6.275
Seattle B3 ....6.175

BAR SHAPES, Hot-Rolled Alloy
Aliquippa,Pa. J5 ....6.55
Clairton,Pa. U5 ....6.55
Gary,Ind. U5 ....6.55
Houston S5 ....6.80
KansasCity,Mo. S5 ....6.80
Pittsburgh J5 ....6.55
Youngstown U5 ....6.55

BARS, C.F., Leaded Alloy (Including leaded extra)
Ambridge,Pa. W18 ....9.925
BeaverFalls,Pa. M12. ..9.925
Camden,N.J. P13 ....10.10
Chicago W18 ....9.925
Cleveland C20 ....9.925*
Elyria,O. W8 ....9.925
LosAngeles P2, S30 ..11.40*
Monaca,Pa. S17 ....9.925
Newark,N.J. W18 ....10.10
SpringCity,Pa. K3 ....10.10
Warren,O. C17 ....9.925

*Grade A; add 0.50c for Grade B.

BARS, Cold-Finished Carbon
Ambridge,Pa. W18 ....7.30
BeaverFalls,Pa. M12,R2.7.30
Birmingham C15 ....7.90
Buffalo B5 ....7.35
Camden,N.J. P13 ....7.75
Carnegie,Pa. C12 ....7.30
Chicago W18 ....7.30
Cleveland A7, C20 ....7.30
Detroit B5, P17 ....7.50
Detroit S41 ....7.30
Donora,Pa. A7 ....7.30
Elyria,O. W8 ....7.30
FranklinPark,Ill. N5 ...7.30
Gary,Ind. R2 ....7.30
GreenBay,Wis. F7 ....7.30
Hammond,Ind. J5, L2 ...7.30
Hartford,Conn. R2 ....7.80
Harvey,Ill. B5 ....7.30
LosAngeles(49) S30 ....8.75
LosAngeles P2, R2 ....8.75
Mansfield,Mass. B5 ....7.85
Massillon,O. R2, R8 ....7.30
Midland,Pa. C18 ....7.30
Monaca,Pa. S17 ....7.30
Newark,N.J. W18 ....7.75
NewCastle,Pa.(17) B4 ..7.30
Pittsburgh J5 ....7.30
Plymouth,Mich.P5 ....7.55
Putnam,Conn. W18 ....7.85
Readville,Mass. C14 ....7.85
S.Chicago,Ill. W14 ....7.30
SpringCity,Pa. K3 ....7.75
Struthers,O. Y1 ....7.30
Warren,O. C17 ....7.30
Willimantic,Conn. J5 ...7.80
Waukegan,Ill. A7 ....7.30
Youngstown F3, Y1 ....7.30

BARS, Cold-Finished Carbon (Turned and Ground)
Cumberland,Md.(5) C19..6.55

BARS, Cold-Finished Alloy
Ambridge,Pa. W18 ....8.775
BeaverFalls,Pa. M12,R2 8.775
Bethlehem,Pa. B2 ....8.775
Bridgeport,Conn. C32 8.925
Buffalo B5 ....8.775
Camden,N.J. P13 ....8.95
Canton,O. T7 ....8.775
Carnegie,Pa. C12 ....8.775
Chicago W18 ....8.775
Cleveland A7, C20 ....8.775
Detroit B5, P17 ....8.975
Detroit S41 ....8.775
Donora,Pa. A7 ....8.775
Elyria,O. W8 ....8.775
FranklinPark,Ill. N5 ...8.775
Gary,Ind. R2 ....8.775
GreenBay,Wis. F7 ....8.775
Hammond,Ind. J5, L2 ...8.775
Hartford,Conn. R2 ....9.075
Harvey,Ill. B5 ....8.775
Lackawanna,N.Y. B2 ..8.775
LosAngeles P2, S30 ...10.75
Mansfield,Mass. B5 ....9.075
Massillon,O. R2, R8 ....8.775
Midland,Pa. C18 ....8.775
Monaca,Pa. S17 ....8.775
Newark,N.J. W18 ....8.95
Plymouth,Mich. P5 ....8.975
S.Chicago,Ill. W14 ....8.775
SpringCity,Pa. K3 ....8.95
Struthers,O. Y1 ....8.775
Warren,O. C17 ....8.775
Waukegan,Ill. A7 ....8.775
Willimantic,Conn. J5 ...9.075
Worcester,Mass. A7 ....9.075
Youngstown F3, Y1 ....8.775

BARS, Reinforcing (To Fabricators)

AlabamaCity,Ala. R2 ..5.425
Atlanta A11 .....5.425
Birmingham C15 .....5.425
Buffalo R2 .....5.425
Cleveland R2 .....5.425
Ecorse,Mich. G5 .....5.775
Emeryville,Calif. J7 ...6.175
Fairfield,Ala. T2 .....5.425
Fairless,Pa. U5 .....5.575
Fontana,Calif. K1 ....6.125
Ft.Worth,Tex.(4)(26)T4 5.875
Gary,Ind. U5 .....5.425
Houston S5 .....5.675
Ind.Harbor,Ind. I-2, Y1 5.425
Johnstown,Pa. B2 ....5.425
Joliet,Ill. P22 .....5.425
KansasCity,Mo. S5 ...5.675
Kokomo,Ind. C16 .....5.525
Lackawanna,N.Y. B2 ..5.425
LosAngeles B3 .....6.125
Milton,Pa. M18 .....5.575
Minnequa,Colo. C10 ...5.875
Niles,Calif. P1 .....6.125
Pittsburg,Calif. C11 ...6.125
Pittsburgh J5 .....5.425
Portland,Oreg. O4 ....6.175
SandSprings,Okla. S5 ..5.925
Seattle B3, N14 .....6.175
S.Chicago,Ill. R2 .....5.425
S.Duquesne,Pa. U5 ....5.425
S.SanFrancisco B3 ....6.175
SparrowsPoint,Md. B2..5.425
Sterling,Ill.(1) N15 ...5.425
Sterling,Ill. N15 .....5.525
Struthers,O. Y1 .....5.425
Tonawanda,N.Y. B12 ..6.00
Torrance,Calif. C11 ...6.125
Youngstown R2, U5 ..5.425

BARS, Reinforcing (Fabricated; to Consumers)

Boston B2, U8 .....7.65
Chicago U8 .....6.91
Cleveland U8 .....6.89
Houston S5 .....7.35
Johnstown,Pa. B2 .....7.08
KansasCity,Mo. S5 ....7.35
Lackawanna,N.Y. B2 ..6.85
Marion,O. P11 .....6.70
Newark,N.J. U8 .....7.55
Philadelphia U8 .....7.38
Pittsburgh J5, U8 .....7.10
SandSprings,Okla. S5 ...7.60
Seattle B3, N14 .....7.70
SparrowsPt.,Md. B2 ....7.08
St.Paul U8 .....7.92
Williamsport,Pa. S19 ..7.00

BARS, Wrought Iron

Economy,Pa.(S.R.)B14 14.45
Economy,Pa.(D.R.)B14 18.00
Economy(Staybolt)B14. 18.45

RAIL STEEL BARS

ChicagoHts.(3) C2, I-2.5.325
ChicagoHts.(4)(44) I-2.5.425
ChicagoHts.(4) C2 ....5.425
Franklin,Pa.(3) F5 ...5.325
Franklin,Pa.(4) F5 ...5.425
JerseyShore,Pa.(3) J8 ..5.30
Marion,O.(3) P11 .....5.325
Tonawanda(3) B12 ...5.325
Tonawanda(4) B12 ....6.00
Williamsport,Pa.(3) S19.5.50

SHEETS

SHEETS, Hot-Rolled Steel (18 Gage and Heavier)

AlabamaCity,Ala. R2 ..4.925
Allenport,Pa. P7 .....4.925
Ashland,Ky.(8) A10 ..4.925
Cleveland J5, R2 .....4.925
Conshohocken,Pa. A3 ..4.975
Detroit(8) M1 .....5.025
Ecorse,Mich. G5 .....5.025
Fairfield,Ala. T2 .....4.925
Fairless,Pa. U5 .....4.975
Fontana,Calif. K1 ....5.675
Gary,Ind. U5 .....4.925
Geneva,Utah C11 .....5.025
GraniteCity,Ill.(8) G4 ..5.125
Ind.Harbor,Ind. I-2, Y1 4.925
Irvin,Pa. U5 .....4.925
Lackawanna,N.Y. B2 ..4.925
Mansfield,O. E6 .....4.925
Munhall,Pa. U5 .....4.925
Newport,Ky.(8) A2 ...4.925
Niles,O. M21, S3 .....4.925
Pittsburg,Calif. C11 ....5.625
Pittsburgh J5 .....4.925
Portsmouth,O. P12 ....4.925
Riverdale,Ill. A1 .....4.925
Sharon,Pa. S3 .....4.925
S.Chicago,Ill. W14 ....4.925
SparrowsPoint,Md. B2..4.925
Steubenville,O. W10 ...4.925
Warren,O. R2 .....4.925
Weirton,W.Va. W6 ....4.925
Youngstown U5, Y1 ...4.925

SHEETS, H.R. (19) Ga. & Lighter

Niles,O. M21 .....6.05

SHEETS, H.R. Alloy

Gary,Ind. U5 .....8.10
Ind.Harbor,Ind. Y1 ....8.10
Irvin,Pa. U5 .....8.10
Munhall,Pa. U5 .....8.10
Newport,Ky. A2 .....8.10
Youngstown U5, Y1 ....8.10

SHEETS, H.R. (14 Ga. & Heavier) High-Strength, Low-Alloy

Cleveland J5, R2 .....7.275
Conshohocken,Pa. A3 ..7.325
Ecorse,Mich. G5 .....7.375
Fairfield,Ala. T2 .....7.275
Fairless,Pa. U5 .....7.325
Farrell,Pa. S3 .....7.275
Fontana,Calif. K1 ....8.025
Gary,Ind. U5 .....7.275
Ind.Harbor,Ind. I-2, Y1 7.275
Irvin,Pa. U5 .....7.275
Lackawanna(35) B2 ..7.275
Munhall,Pa. U5 .....7.275
Pittsburgh J5 .....7.275
S.Chicago,Ill. U5, W14.7.275
Sharon,Pa. S3 .....7.275
SparrowsPoint(36) B2..7.275
Warren,O. R2 .....7.275
Weirton,W.Va. W6 ...7.275
Youngstown U5, Y1 ..7.275

SHEETS, Hot-Rolled Ingot Iron (18 Gage and Heavier)

Ashland,Ky.(8) A10 ..5.175
Cleveland R2 .....5.675
Warren,O. R2 .....5.675

SHEETS, Cold-Rolled Ingot Iron

Cleveland R2 .....6.80
Middletown,O. A10 ....6.55
Warren,O. R2 .....6.80

SHEETS, Cold-Rolled Steel (Commercial Quality)

AlabamaCity,Ala. R2 ..6.05
Allenport,Pa. P7 .....6.05
Cleveland J5, R2 .....6.05
Conshohocken,Pa. A3 ...6.10
Detroit M1 .....6.05
Ecorse,Mich. G5 .....6.15
Fairfield,Ala. T2 .....6.05
Fairless,Pa. U5 .....6.10
Follansbee,W.Va. F4 ...6.05
Fontana,Calif. K1 .....7.30
Gary,Ind. U5 .....6.05
GraniteCity,Ill. G4 ....6.25
Ind.Harbor,Ind. I-2, Y1.6.05
Irvin,Pa. U5 .....6.05
Lackawanna,N.Y. B2 ..6.05
Mansfield,O. E6 .....6.05
Middletown,O. A10 ....6.05
Newport,Ky. A2 .....6.05
Pittsburg,Calif. C11 ....7.00
Pittsburgh J5 .....6.05
Portsmouth,O. P12 .....6.05
SparrowsPoint,Md. B2 ..6.05
Steubenville,O. W10 ....6.05
Warren,O. R2 .....6.05
Weirton,W.Va. W6 ....6.05
Yorkville,O. W10 .....6.05
Youngstown Y1 .....6.05

SHEETS, Cold-Rolled, High-Strength, Low Alloy

Cleveland J5, R2 .....8.975
Ecorse,Mich. G5 .....9.075
Fairless,Pa. U5 .....9.025
Fontana,Calif. K1 ....10.275
Gary,Ind. U5 .....8.975
IndianaHarbor,Ind. Y1.8.975
Irvin,Pa. U5 .....8.975
Lackawanna(37) B2 ..8.975
Pittsburgh J5 .....8.975
SparrowsPoint(38) B2..8.975
Warren,O. R2 .....8.975
Weirton,W.Va. W6 ....8.975
Youngstown Y1 .....8.975

SHEETS, Culvert

	Cu Steel	Cu Fe
Ashland,Ky. A10	.6.95	7.20
Canton,O. R2	...6.95	7.45
Fairfield T2	....6.95	7.20
Gary,Ind. U5	....6.95	7.20
GraniteCity,Ill. G4	7.15	...
Ind.Harbor I-2	...6.95	7.20
Irvin,Pa. U5	....6.95	7.20
Kokomo,Ind. C16	..7.05	...
MartinsFry. W10	..6.95	7.20
Pitts.,Calif. C11	..7.70	...
Pittsburgh J5	....6.95	...
SparrowsPt. B2	..6.95	...

SHEETS, Culvert—Pure Iron

Ind.Harbor,Ind. I-2 ....7.20

SHEETS, Galvanized Steel Hot-Dipped

AlabamaCity,Ala. R2 ..6.60‡
Ashland,Ky. A10 .....6.60†
Canton,O. R2 .....6.60‡
Dover,O. E6 .....6.60†
Fairfield,Ala. T2 .....6.60‡
Gary,Ind. U5 .....6.60†
GraniteCity,Ill. G4 ....6.80*
Ind.Harbor,Ind. I-2 ...6.60†
Irvin,Pa. U5 .....6.60†
Kokomo,Ind. C16 .....6.70‡
MartinsFerry,O. W10 ..6.60*
Middletown,O. A10 ....6.60†
Pittsburg,Calif. C11 ..7.35*
Pittsburgh J5 .....6.60†
SparrowsPt.,Md. B2 ..6.60†
Warren,O. R2 .....6.60†
Weirton,W.Va. W6 ....6.60*

*Continuous and noncontinuous. †Continuous. ‡Noncontinuous.

SHEETS, Well Casing

Fontana,Calif. K1 ....7.175

SHEETS, Galvanized High-Strength, Low-Alloy

Irvin,Pa. U5 .....9.725
SparrowsPt.(39) B2 ...9.725

SHEETS, Galvannealed Steel

Canton,O. R2 .....7.00
Irvin,Pa. U5 .....7.00

SHEETS, Galvanized Ingot Iron (Hot-Dipped Continuous)

Ashland,Ky. A10 .....6.85
Middletown,O. A10 .....6.85

SHEETS, Electrogalvanized

Cleveland(28) R2 .....7.425
Niles,O.(28) R2 .....7.425
Youngstown J5 .....7.275
Weirton,W.Va. W6 ....7.275

SHEETS, Aluminum Coated

Butler,Pa.A10 (type 1). 9.25
Butler,Pa. A10 (type 2). 9.35

SHEETS, Enameling Iron

Ashland,Ky. A10 .....6.625
Cleveland R2 .....6.625
Fairfield,Ala. T2 .....6.625
Gary,Ind. U5 .....6.625
GraniteCity,Ill. G4 ....6.825
Ind.Harbor,Ind. I-2, Y1.6.625
Irvin,Pa. U5 .....6.625
Middletown,O. A10 ....6.625
Niles,O. M21, S3 .....6.625
Youngstown Y1 .....6.625

BLUED STOCK, 29 Gage

Follansbee,W.Va. F4 ..8.65
Ind.Harbor,Ind. I-2 ...8.475
Yorkville,O. W10 .....8.475

SHEETS, Long Terne, Steel (Commercial Quality)

BeechBottom,W.Va.W10 7.00
Gary,Ind. U5 .....7.00
Mansfield,O. E6 .....7.00
Middletown,O. A10 ....7.00
Niles,O. M21, R2, S3...7.00
Weirton,W.Va. W6 .....7.00

SHEETS, Long Terne, Ingot Iron

Middletown,O. A10 .....7.40

Key To Producers

A1 Acme Steel Co.
A2 Acme-Newport Steel Co.
A3 Alan Wood Steel Co.
A4 Allegheny Ludlum Steel
A5 Alloy Metal Wire Div., H. K. Porter Co. Inc.
A6 American Shim Steel Co.
A7 American Steel & Wire Div., U. S. Steel Corp.
A8 Anchor Drawn Steel Co.
A9 Angell Nail & Chaplet
A10 Armco Steel Corp.
A11 Atlantic Steel Co.

B1 Babcock & Wilcox Co.
B2 Bethlehem Steel Co.
B3 Beth. Pac. Coast Steel
B4 Blair Strip Steel Co.
B5 Bliss & Laughlin Inc.
B8 Braeburn Alloy Steel
B9 Brainard Steel Div., Sharon Steel Corp.
B10 E. & G. Brooke, Wickwire Spencer Steel Div., Colo. Fuel & Iron
B11 Buffalo Bolt Co., Div., Buffalo Eclipse Corp.
B12 Buffalo Steel Corp.
B14 A. M. Byers Co.
B15 J. Bishop & Co.

C1 Calstrip Steel Corp.
C2 Calumet Steel Div., Borg-Warner Corp.
C4 Carpenter Steel Co.
C9 Colonial Steel Co.
C10 Colorado Fuel & Iron
C11 Columbia-Geneva Steel
C12 Columbia Steel & Shaft.
C13 Columbia Tool Steel Co.
C14 Compressed Steel Shaft.
C15 Connors Steel Div., H. K. Porter Co. Inc.
C16 Continental Steel Corp.
C17 Copperweld Steel Co.
C18 Crucible Steel Co.
C19 Cumberland Steel Co.
C20 Cuyahoga Steel & Wire
C22 Claymont Plant, Wickwire Spencer Steel Div., Colo. Fuel & Iron
C23 Charter Wire Inc.
C24 G. O. Carlson Inc.
C32 Carpenter Steel of N.Eng.

D2 Detroit Steel Corp.
D3 Dearborn Div., Sharon Steel Corp.
D4 Disston Div., H. K. Porter Co. Inc.
D6 Driver-Harris Co.
D7 Dickson Weatherproof Nail Co.
D8 Damascus Tube Co.
D9 Wilbur B. Driver Co.

E1 Eastern Gas & Fuel Assoc.
E2 Eastern Stainless Steel
E4 Electro Metallurgical Co.
E5 Elliott Bros. Steel Co.
E6 Empire-Reeves Steel Corp.

F2 Firth Sterling Inc.
F3 Fitzsimmons Steel Co.
F4 Follansbee Steel Corp.
F5 Franklin Steel Div., Borg-Warner Corp.
F6 Fretz-Moon Tube Co.
F7 Ft. Howard Steel & Wire
F8 Ft. Wayne Metals Inc.

G4 Granite City Steel Co.
G5 Great Lakes Steel Corp.
G6 Greer Steel Co.
G8 Green River Steel Corp.

H1 Hanna Furnace Corp.
H7 Helical Tube Co.

I-1 Igoe Bros. Inc.
I-2 Inland Steel Co.
I-3 Interlake Iron Corp.
I-4 Ingersoll Steel Div., Borg-Warner Corp.
I-6 Ivins Steel Tube Works
I-7 Indiana Steel & Wire Co.

J1 Jackson Iron & Steel Co.
J3 Jessop Steel Co.
J4 Johnson Steel & Wire Co.
J5 Jones & Laughlin Steel
J6 Joslyn Mfg. & Supply
J7 Judson Steel Corp.
J8 Jersey Shore Steel Co.

K1 Kaiser Steel Corp.
K2 Keokuk Electro-Metals
K3 Keystone Drawn Steel
K4 Keystone Steel & Wire
K7 Kenmore Metals Corp.

L1 Laclede Steel Co.
L2 LaSalle Steel Co.
L3 Latrobe Steel Co.
L6 Lone Star Steel Co.
L7 Lukens Steel Co.

M1 McLouth Steel Corp.
M4 Mahoning Valley Steel
M6 Mercer Pipe Div., Sawhill Tubular Products
M8 Mid-States Steel & Wire
M12 Moltrup Steel Products
M14 McInnes Steel Co.
M16 Md. Fine & Special. Wire
M17 Metal Forming Corp.
M18 Milton Steel Div., Merritt-Chapman&Scott
M21 Mallory-Sharon Metals Corp.
M22 Mill Strip Products Co.

N1 National-Standard Co.
N2 National Supply Co.
N3 National Tube Div., U. S. Steel Corp.
N5 Nelsen Steel & Wire Co.
N6 New England High Carbon Wire Co.
N8 Newman-Crosby Steel
N14 Northwest. Steel Rolling Mills Inc.
N15 Northwestern S.&W. Co.
N20 Neville Ferro Alloy Co.

O4 Oregon Steel Mills

P1 Pacific States Steel Corp.
P2 Pacific Tube Co.
P4 Phoenix Iron & Steel Co., Sub. of Barium Steel Corp.
P5 Pilgrim Drawn Steel
P6 Pittsburgh Coke & Chem.
P7 Pittsburgh Steel Co.
P11 Pollak Steel Co.
P12 Portsmouth Div., Detroit Steel Corp.
P13 Precision Drawn Steel
P14 Pitts. Screw & Bolt Co.
P15 Pittsburgh Metallurgical
P16 Page Steel & Wire Div., American Chain & Cable
P17 Plymouth Steel Corp.
P19 Pitts. Rolling Mills
P20 Prod. Steel Strip Corp.
P22 Phoenix Mfg. Co.
P24 Phil. Steel & Wire Corp.

R2 Republic Steel Corp.
R3 Rhode Island Steel Corp.
R5 Roebling's Sons, John A.
R6 Rome Strip Steel Co.
R8 Reliance Div., Eaton Mfg.
R9 Rome Mfg. Co.
R10 Rodney Metals Inc.

S1 Seneca Wire & Mfg. Co.
S3 Sharon Steel Corp.
S4 Sharon Tube Co.
S5 Sheffield Div., Armco Steel Corp.
S6 Shenango Furnace Co.
S7 Simmons Co.
S8 Simonds Saw & Steel Co.
S12 Spencer Wire Corp.
S13 Standard Forgings Corp.
S14 Standard Tube Co.
S15 Stanley Works
S17 Superior Drawn Steel Co.
S18 Superior Steel Div., Copperweld Steel Co.
S19 Sweet's Steel Co.
S20 Southern States Steel
S23 Superior Tube Co.
S25 Stainless Welded Prod.
S26 Specialty Wire Co. Inc.
S30 Sierra Drawn Steel Corp.
S40 Seneca Steel Service
S41 Stainless Steel Div., J&L Steel Corp.
S42 Southern Elec. Steel Co.

T2 Tenn. Coal & Iron Div., U. S. Steel Corp.
T3 Tenn. Products & Chemical Corp.
T4 Texas Steel Co.
T5 Thomas Strip Div., Pittsburgh Steel Co.
T6 Thompson Wire Co.
T7 Timken Roller Bearing
T9 Tonawanda Iron Div., Am. Rad. & Stan. San.
T13 Tube Methods Inc.
T19 Techalloy Co. Inc.

U4 Universal-Cyclops Steel
U5 United States Steel Corp.
U6 U. S. Pipe & Foundry
U7 Ulbrich Stainless Steels
U8 U.S. Steel Supply Div., U. S. Steel Corp.

V2 Vanadium-Alloys Steel
V3 Vulcan-Kidd Steel Div., H. K. Porter Co.

W1 Wallace Barnes Co.
W2 Wallingford Steel Co.
W3 Washburn Wire Co.
W4 Washington Steel Corp.
W6 Weirton Steel Co.
W8 Western Automatic Machine Screw Co.
W9 Wheatland Tube Co.
W10 Wheeling Steel Corp.
W12 Wickwire Spencer Steel Div., Colo. Fuel & Iron
W13 Wilson Steel & Wire Co.
W14 Wisconsin Steel Div., International Harvester
W15 Woodward Iron Co.
W18 Wyckoff Steel Co.

Y1 Youngstown Sheet & Tube

STRIP

STRIP, Hot-Rolled Carbon

Ala. City, Ala. (27) R2 ..4.925
Allenport, Pa. P7 ..4.925
Alton, Ill. L1 ..5.125
Ashland, Ky. (8) A10 ..4.925
Atlanta A11 ..4.925
Bessemer, Ala. T2 ..4.925
Birmingham C15 ..4.925
Buffalo (27) R2 ..4.925
Conshohocken, Pa. A3 ..4.975
Detroit M1 ..5.025
Ecorse, Mich. G5 ..5.025
Fairfield, Ala. T2 ..4.925
Fontana, Calif. K1 ..5.675
Gary, Ind. U5 ..4.925
Ind. Harbor, Ind. I-2, Y1 4.925
Johnstown, Pa. (25) B2 ..4.925
Lackaw'na, N.Y. (25) B2 4.925
LosAngeles (25) B3 ..5.675
Minnequa, Colo. C10 ..6.025
Riverdale, Ill. A1 ..4.925
SanFrancisco S7 ..6.35
Seattle (25) B3 ..5.925
Seattle N14 ..6.35
Sharon, Pa. S3 ..4.925
S. Chicago W14 ..4.925
S. SanFrancisco (25) B3 ..5.675
SparrowsPoint, Md. B2 ..4.925
Sterling, Ill. (1) N15 ..4.925
Sterling, Ill. N15 ..5.025
Torrance, Calif. C11 ..5.675
Warren, O. R2 ..4.925
Weirton, W.Va. W6 ..4.925
Youngstown U5 ..4.925

STRIP, Hot-Rolled Alloy

Carnegie, Pa. S18 ..8.10
Farrell, Pa. S3 ..8.10
Gary, Ind. U5 ..8.10
Houston S5 ..8.35
Ind. Harbor, Ind. Y1 ..8.10
KansasCity, Mo. S5 ..8.35
LosAngeles B3 ..9.30
Lowellville, O. S3 ..8.10
Newport, Ky. A2 ..8.10
Sharon, Pa. A2, S3 ..8.10
S. Chicago, Ill. W14 ..8.10
Youngstown U5, Y1 ..8.10

STRIP, Hot-Rolled High-Strength, Low-Alloy

Bessemer, Ala. T2 ..7.325
Conshohocken, Pa. A3 ..7.325
Ecorse, Mich. G5 ..7.425
Fairfield, Ala. T2 ..7.325
Farrell, Pa. S3 ..7.325
Gary, Ind. U5 ..7.325
Ind. Harbor, Ind. I-2, Y1 7.325
Lackawanna, N.Y. B2 ..7.325
LosAngeles (25) B3 ..8.075
Seattle (25) B3 ..8.325
Sharon, Pa. S3 ..7.325
S. Chicago, Ill. W14 ..7.325
S. SanFrancisco (25) B3 .8.075
SparrowsPoint, Md. B2 ..7.325
Warren, O. R2 ..7.325
Weirton, W.Va. W6 ..7.325
Youngstown U5, Y1 ..7.325

STRIP, Hot-Rolled Ingot Iron

Ashland, Ky. (8) A10 ..5.175
Warren, O. R2 ..5.675

STRIP, Cold-Rolled Carbon

Anderson, Ind. G6 ..7.15
Baltimore T6 ..7.15
Boston T6 ..7.70
Buffalo S40 ..7.15
Cleveland A7, J5 ..7.15
Dearborn, Mich. D3 ..7.25
Detroit D2, M1, P20 ..7.25
Dover, O. G6 ..7.15
Ecorse, Mich. G5 ..7.25
Evanston, Ill. M22 ..7.25
Follansbee, W.Va. F4 ..7.15
Fontana, Calif. K1 ..9.00
FranklinPark, Ill. T6 ..7.25
Ind. Harbor, Ind. Y1 ..7.15
Indianapolis J5 ..7.30
LosAngeles J5 ..9.05
LosAngeles C1 ..9.20
NewBedford, Mass. R10 ..7.60
NewBritain, Conn. S15 ..7.60
NewCastle, Pa. B4, E5 ..7.15
NewHaven, Conn. D2 ..7.60
NewKensington, Pa. A6 ..7.15
Pawtucket, R.I. R3 ..7.80
Pawtucket, R.I. N8 ..7.70
Philadelphia P24 ..7.70
Pittsburgh J5 ..7.15
Riverdale, Ill. A1 ..7.25
Rome, N.Y. (32) R6 ..7.15
Sharon, Pa. S3 ..7.15
Trenton, N.J. (31) R5 ..8.60
Wallingford, Conn. W2 ..7.60
Warren, O. R2, T5 ..7.15
Weirton, W.Va. W6 ..7.15
Worcester, Mass. A7 ..7.70
Youngstown J5, Y1 ..7.15

STRIP, Cold-Rolled Alloy

Boston T6 ..15.40
Carnegie, Pa. S18 ..15.05
Cleveland A7 ..15.05
Dover, O. G6 ..15.05
Farrell, Pa. S3 ..15.05
FranklinPark, Ill. T6 ..15.05
Harrison, N.J. C18 ..15.05
Indianapolis J5 ..15.20
Lowellville, O. S3 ..15.05
Pawtucket, R.I. N8 ..15.40
Riverdale, Ill. A1 ..15.05
Sharon, Pa. S3 ..15.05
Worcester, Mass. A7 ..15.35
Youngstown J5 ..15.05

STRIP, Cold-Rolled High-Strength, Low-Alloy

Cleveland A7 ..10.45
Dearborn, Mich. D3 ..10.60
Dover, O. G6 ..10.45
Ecorse, Mich. G5 ..10.60
Farrell, Pa. S3 ..10.50
Ind. Harbor, Ind. Y1 ..10.65
Sharon, Pa. S3 ..10.50
Warren, O. R2 ..10.45
Weirton, W.Va. W6 ..10.50
Youngstown Y1 ..10.65

STRIP, Cold-Rolled Ingot Iron

Warren, O. R2 ..7.90

STRIP, C.R. Electrogalvanized

Cleveland A7 ..7.15*
Dover, O. G6 ..7.15*
Evanston, Ill. M22 ..7.25*
Riverdale, Ill. A1 ..7.25*
Warren, O. B9, T5 ..7.15*
Worcester, Mass. A7 ..7.70*
Youngstown J5 ..7.15*

*Plus galvanizing extras.

STRIP, Galvanized (Continuous)

Sharon, Pa. S3 ..7.275

TIGHT COOPERAGE HOOP

Atlanta A11 ..5.65
Riverdale, Ill. A1 ..5.50
Sharon, Pa. S3 ..5.35
Youngstown U5 ..5.35

STRIP, Cold-Finished Spring Steel (Annealed)	0.26-0.40C	0.41-0.60C	0.61-0.80C	0.81-1.05C	1.06-1.35C
Baltimore T6	9.50	10.70	12.90	15.90	18.85
Boston T6	9.50	10.70	12.90	15.90	18.85
Bristol, Conn. W1	...	10.70	12.90	16.10	19.30
Carnegie, Pa. S18	8.95	10.40	12.60	15.60	....
Cleveland A7	8.95	10.40	12.60	15.60	18.55
Dearborn, Mich. D3	9.05	10.50	12.70	....	....
Detroit D2	9.05	10.50	12.70	15.70	....
Dover, O. G6	8.95	10.40	12.60	15.60	18.55
Evanston, Ill. M22	8.95	10.40	12.60	15.60	....
Fostoria, O. S1	10.05	10.40	12.60	15.60	....
FranklinPark, Ill. T6	9.05	10.40	12.60	15.60	18.55
Harrison, N.J. C18	....	....	12.90	16.10	19.30
Indianapolis J5	9.10	10.55	12.60	15.60	18.65
LosAngeles C1	11.15	12.60	14.80	17.80	....
LosAngeles J5	11.15	12.60	14.80	....	....
NewBritain, Conn. S15	9.40	10.70	12.90	15.90	18.85
NewCastle, Pa. B4, E5	8.95	10.40	12.60	15.60	....
NewHaven, Conn. D2	9.40	10.70	12.90	15.90	....
NewKensington, Pa. A6	8.95	10.40	12.60	15.60	....
NewYork W3	....	10.70	12.90	16.10	19.30
Pawtucket, R.I. N8	9.50	10.70	12.90	15.90	18.85
Riverdale, Ill. A1	9.05	10.40	12.60	15.60	18.55
Rome, N.Y. (32) R6	8.95	10.40	12.60	15.60	18.55
Sharon, Pa. S3	8.95	10.40	12.60	15.60	18.55
Trenton, N.J. R5	....	10.70	12.90	16.10	19.30
Wallingford, Conn. W2	9.40	10.70	12.90	15.90	18.75
Warren, O. T5	8.95	10.40	12.60	15.60	18.55
Worcester, Mass. A7, T6	9.50	10.70	12.90	15.90	18.85
Youngstown J5	8.95	10.40	12.60	15.60	18.55

Spring Steel (Tempered)			Up to 0.80C	0.81-1.05C	1.06-1.35C
Bristol, Conn. W1	...	...	18.10	21.95	26.30
Buffalo W12	...	...	18.10	....	....
Fostoria, O. S1	...	...	18.30	22.15	....
FranklinPark, Ill. T6	...	...	18.45	22.30	26.65
Harrison, N.J. C18	...	...	18.10	21.95	26.30
New York W3	...	...	18.10	21.95	26.30
Palmer, Mass. W12	...	...	18.10	....	....
Trenton, N.J. R5	...	...	18.10	21.95	26.30
Worcester, Mass. A7, T6	...	...	18.10	21.95	26.30
Youngstown J5	...	...	18.45	22.30	26.65

SILICON STEEL

H.R. SHEETS (22 Ga., cut lengths)	Field	Armature	Electric	Motor	Dynamo
BeechBottom, W.Va. W10	....	....	11.80	12.90	13.95
Mansfield, O. E6	9.625	11.10	11.80	12.90	13.95
Newport, Ky. A2	9.625	11.10	11.80	12.90	13.95
Niles, O. M21, S3	9.625	11.10	11.80	12.90	....
Vandergrift, Pa. U5	....	11.10	11.80	12.90	13.95
Warren, O. R2	9.625	11.10	11.80	12.90	....
Zanesville, O. A10	....	11.10	11.80	12.90	13.95

C.R. COILS & CUT LENGTHS (22 Ga.) Fully Processed (Semiprocessed ½c lower)	Field	Armature	Electric	Motor	Dynamo
BeechBottom, W.Va. W10	....	11.35	12.05	13.15	14.20
Brackenridge, Pa. A4	....	....	12.05	13.15	14.20
GraniteCity, Ill. G4	9.825*	11.05*	11.75*	12.85*	....
IndianaHarbor, Ind. I-2	9.625†	10.85*	11.55*	12.65*	....
Mansfield, O. E6	9.625*	11.35	12.05	13.15	14.20
Vandergrift, Pa. U5	9.625*	11.35	12.05	13.15	14.20
Warren, O. R2	9.625*	11.35	12.05	13.15	14.20
Zanesville, O. A10	....	11.35†	12.05	13.15	14.20
					Stator
Vandergrift, Pa. U5	....	....	....	....	7.85

H.R. SHEETS (22 Ga., cut lengths)	T-72	T-65	T-58	T-52
BeechBottom, W.Va. W10	15.00	15.55	16.05	17.10
Vandergrift, Pa. U5	15.00	15.55	16.05	17.10
Zanesville, O. A10	15.00	15.55	16.05	17.10

C.R. COILS & CUT LENGTHS (22 Ga.)	Grain Oriented T-100	T-90	T-80	T-73	T-66	T-72
Brackenridge, Pa. A4	....	17.60	19.20	19.70	20.20	15.25††
Butler, Pa. A10	....	....	19.20	19.70	20.20	....
Vandergrift, Pa. U5	16.60	17.60	19.20	19.70	20.20	15.25**
Warren, O. R2	....	....	....	....	....	15.25†

*Semiprocessed. †Fully processed only. ‡Coils, annealed, semiprocessed ½c lower. **Cut lengths, ¾-cent lower. ††Coils only.

TIN MILL PRODUCTS

TIN PLATE, Electrolytic (Base Box)	0.25 lb	0.50 lb	0.75 lb
Aliquippa, Pa. J5	$8.75	$9.00	$9.40
Fairfield, Ala. T2	8.85	9.10	9.50
Fairless, Pa. U5	8.85	9.10	9.50
Fontana, Calif. K1	9.50	9.75	10.15
Gary, Ind. U5	8.75	9.00	9.40
GraniteCity, Ill. G4	8.85	9.10	9.50
IndianaHarbor, Ind. I-2, Y1	8.75	9.00	9.40
Irvin, Pa. U5	8.75	9.00	9.40
Niles, O. R2	8.75	9.00	9.40
Pittsburg, Calif. C11	9.50	9.75	10.15
SparrowsPoint, Md. B2	8.85	9.10	9.50
Weirton, W.Va. W6	8.75	9.00	9.40
Yorkville, O. W10	8.75	9.00	9.40

ELECTROTIN (22-27 Gage; Dollars per 100 lb)			
Aliquippa, Pa. J5	7.725	7.925	....
Niles, O. R2	7.725	7.925	8.125

TIN PLATE, American	1.25 lb	1.50 lb
Aliquippa, Pa. J5	$10.05	$10.30
Fairfield, Ala. T2	10.15	10.40
Fairless, Pa. U5	10.15	10.40
Fontana, Calif. K1	10.80	11.05
Gary, Ind. U5	10.05	10.30
Ind. Harb. Y1	10.05	10.30
Pitts., Calif. C11	10.80	11.05
Sp. Pt., Md. B2	10.15	10.40
Weirton, W.Va. W6	10.05	10.30
Yorkville, O. W10	10.05	10.30

BLACK PLATE (Base Box)

Aliquippa, Pa. J5 ..$7.85
Fairfield, Ala. T2 ..7.95
Fairless, Pa. U5 ..7.95
Fontana, Calif. K1 ..8.60
Gary, Ind. U5 ..7.85
GraniteCity, Ill. G4 ..7.95
Ind. Harbor, Ind. I-2, Y1.. 7.85
Irvin, Pa. U5 ..7.85

HOLLOWARE ENAMELING Black Plate (29 Gage)

Aliquippa, Pa. J5 ..$7.50
Gary, Ind. U5 ..7.50
GraniteCity, Ill. G4 ..7.60
Ind. Harbor, Ind. Y1 ..7.50
Irvin, Pa. U5 ..7.50
Yorkville, O. W10 ..7.50

MANUFACTURING TERNES (Special Coated, Base Box)

Gary, Ind. U5 ..$9.70
Irvin, Pa. U5 ..9.70

ROOFING SHORT TERNES (8 lb Coated, Base Box)

Gary, Ind. U5 ..$11.25

WIRE

WIRE, Manufacturers Bright, Low Carbon

AlabamaCity, Ala. R2 ..7.65
Aliquippa, Pa. J5 ..7.65
Alton, Ill. L1 ..7.85
Atlanta A11 ..7.65
Bartonville, Ill. K4 ..7.75
Buffalo W12 ..7.65
Chicago W13 ..7.65
Cleveland A7, C20 ..7.65
Crawfordsville, Ind. M8 ..7.75
Donora, Pa. A7 ..7.65
Duluth A7 ..7.65
Fairfield, Ala. T2 ..7.65
Fostoria, O. (24) S1 ..7.75
Houston S5 ..7.90
Jacksonville, Fla. M8 ..8.00
Johnstown, Pa. B2 ..7.65
Joliet, Ill. A7 ..7.65
KansasCity, Mo. S5 ..7.90
Kokomo, Ind. C16 ..7.75
LosAngeles B3 ..8.60
Minnequa, Colo. C10 ..7.90
Monessen, Pa. P7, P16 ..7.65
N. Tonawanda, N.Y. B11 ..7.65
Palmer, Mass. W12 ..7.95
Pittsburg Calif. C11 ..8.60
Portsmouth, O. P12 ..7.65
Rankin, Pa. A7 ..7.65
S. Chicago, Ill. R2 ..7.65
S. SanFrancisco C10 ..8.60
SparrowsPoint, Md. B2 ..7.75
Sterling, Ill. (1) N15 ..7.65
Sterling, Ill. N15 ..7.75
Struthers, O. Y1 ..7.65
Waukegan, Ill. A7 ..7.65
Worcester, Mass. A7 ..7.95

WIRE, Gal'd., for ACSR

Bartonville, Ill. K4 ..12.65
Buffalo W12 ..12.65
Cleveland A7 ..12.65
Donora, Pa. A7 ..12.65
Duluth A7 ..12.65
Johnstown, Pa. B2 ..12.65
Minnequa, Colo. C10 ..12.775
Monessen, Pa. P7, P16 ..12.65
Muncie, Ind. I-7 ..12.85
NewHaven, Conn. A7 ..12.95
Palmer, Mass. W12 ..12.95
Pittsburg, Calif. C11 ..13.45
Portsmouth, O. P12 ..12.65
Roebling, N.J. R5 ..12.95
SparrowsPt., Md. B2 ..12.75
Struthers, O. Y1 ..12.65
Trenton, N.J. A7 ..12.95
Waukegan, Ill. A7 ..12.65
Worcester, Mass. A7 ..12.95

WIRE, Upholstery Spring

Aliquippa, Pa. J5 ..9.30
Alton, Ill. L1 ..9.50
Buffalo W12 ..9.30
Cleveland A7 ..9.30
Donora, Pa. A7 ..9.30
Duluth A7 ..9.30
Johnstown, Pa. B2 ..9.30
KansasCity, Mo. S5 ..9.55
LosAngeles B3 ..10.25
Minnequa, Colo. C10 ..9.50
Monessen, Pa. P7, P16 ..9.30
NewHaven, Conn. A7 ..9.60
Palmer, Mass. W12 ..9.60
Pittsburg, Calif. C11 ..10.25
Portsmouth, O. P12 ..9.30
Roebling, N.J. R5 ..9.60
S. Chicago, Ill. R2 ..9.30
S. SanFrancisco C10 ..10.25
SparrowsPt., Md. B2 ..9.40
Struthers, O. Y1 ..9.30
Trenton, N.J. A7 ..9.60
Waukegan, Ill. A7 ..9.30
Worcester, Mass. A7 ..9.60

WIRE, MB Spring, High-Carbon

Aliquippa, Pa. J5 ..9.30
Alton, Ill. L1 ..9.50
Bartonville, Ill. K4 ..9.40
Buffalo W12 ..9.30
Cleveland A7 ..9.30
Donora, Pa. A7 ..9.30
Duluth A7 ..9.30
Fostoria, O. S1 ..9.35
Johnstown, Pa. B2 ..9.30
KansasCity, Mo. S5 ..9.55
LosAngeles B3 ..10.25
Milbury, Mass. (12) N6 ..9.60
Minnequa, Colo. C10 ..9.50
Monessen, Pa. P7, P16 ..9.30
Muncie, Ind. I-7 ..9.50
Palmer, Mass. (12) W12 ..9.60
Pittsburg, Calif. C11 ..10.25
Portsmouth, O. P12 ..9.30
Roebling, N.J. R5 ..9.60
S. Chicago, Ill. R2 ..9.30
S. SanFrancisco C10 ..10.25
SparrowsPt., Md. B2 ..9.40
Struthers, O. Y1 ..9.30
Trenton, N.J. A7 ..9.60
Waukegan, Ill. A7 ..9.30
Worcester A7, J4, T6 ..9.60

WIRE, Fine & Weaving (8" Coils)

Alton, Ill. L1 ..15.80
Bartonville, Ill. K4 ..15.70
Buffalo W12 ..15.60
Chicago W13 ..15.60
Cleveland A7 ..15.60
Crawfordsville, Ind. M8 ..15.70
Fostoria, O. S1 ..15.60
Houston S5 ..15.85
Jacksonville, Fla. M8 ..15.95
Johnstown, Pa. B2 ..15.60
KansasCity, Mo. S5 ..15.85
Kokomo, Ind. C16 ..15.60
Minnequa, Colo. C10 ..15.85
Monessen, Pa. P16 ..15.60
Muncie, Ind. I-7 ..15.80
Palmer, Mass. W12 ..15.90
S. SanFrancisco C10 ..16.45
Waukegan, Ill. A7 ..15.60
Worcester, Mass. A7, T6 15.90

ROPE WIRE (A)

Bartonville, Ill. K4 ..12.75
Buffalo W12 ..12.75
Fostoria, O. S1 ..12.75
Johnstown, Pa. B2 ..12.75
Monessen, Pa. P7 ..12.75
Muncie, Ind. I-7 ..12.95
Palmer, Mass. W12 ..13.05
Portsmouth, O. P12 ..12.75
Roebling, N.J. R5 ..13.05
SparrowsPt., Md. B2 ..12.85
Struthers, O. Y1 ..12.75
Worcester, Mass. J4 ..13.05

(A) Plow and Mild Plow; add 0.25c for Improved Plow

WIRE, Tire Bead

Bartonville,Ill. K4	16.55
Monessen,Pa. P16	16.55
Roebling,N.J. R5	17.05

WIRE, Cold-Rolled Flat

Anderson,Ind. G6	11.65
Baltimore T6	11.95
Boston T6	11.95
Buffalo W12	11.65
Chicago W13	11.75
Cleveland A7	11.65
Crawfordsville,Ind. M8	11.65
Dover,O. G6	11.65
Fostoria,O. S1	11.65
FranklinPark,Ill. T6	11.75
Kokomo,Ind. C16	11.65
Massillon,O. R8	11.65
Milwaukee C23	11.85
Monessen,Pa. P7, P16	11.65
Palmer,Mass. W12	11.95
Pawtucket,R.I. N8	11.95
Philadelphia P24	11.95
Riverdale,Ill. A1	11.75
Rome,N.Y. R6	11.65
Sharon,Pa. S3	11.65
Trenton,N.J. R5	11.95
Warren,O. B9	11.65
Worcester,Mass. A7, T6	11.95

NAILS, Stock

	Col.
AlabamaCity,Ala. R2	173
Aliquippa,Pa. J5	173
Atlanta A11	175
Bartonville,Ill. K4	175
Chicago W13	173
Cleveland A9	173
Crawfordsville,Ind. M8	175
Donora,Pa. A7	173
Duluth A7	173
Fairfield,Ala. T2	173
Houston S5	178
Jacksonville,Fla. M8	175
Johnstown,Pa. B2	173
Joliet,Ill. A7	173
KansasCity,Mo. S5	178
Kokomo,Ind. C16	175
Minnequa,Colo. C10	178
Monessen,Pa. P7	173
Pittsburg,Calif. C11	192
Rankin,Pa. A7	173
S.Chicago,Ill. R2	173
SparrowsPt.,Md. B2	175
Sterling,Ill.(7) N15	175
Worcester,Mass. A7	179

(To Wholesalers; per cwt)

Galveston,Tex. D7 ....$9.10

NAILS, Cut (100 lb keg)
To Dealers (33)

Conshohocken,Pa. A3	$9.80
Wheeling,W.Va. W10	9.80

POLISHED STAPLES

	Col.
AlabamaCity,Ala. R2	175
Aliquippa,Pa. J5	175
Atlanta A11	177
Bartonville,Ill. K4	177
Crawfordsville,Ind. M8	177
Donora,Pa. A7	175
Duluth A7	175
Fairfield,Ala. T2	175
Houston S5	180
Jacksonville,Fla. M8	177
Johnstown,Pa. B2	175
Joliet,Ill. A7	175
KansasCity,Mo. S5	180
Kokomo,Ind. C16	177
Minnequa,Colo. C10	180
Pittsburg,Calif. C11	194
Rankin,Pa. A7	175
S.Chicago,Ill. R2	175
SparrowsPt.,Md. B2	177
Sterling,Ill.(7) N15	175
Worcester,Mass. A7	181

TIE WIRE, Automatic Baler (14½ Ga.)(Per 97 lb Net Box)
Coil No. 3150

AlabamaCity,Ala. R2	$10.26
Atlanta A11	10.36
Bartonville,Ill. K4	10.36
Buffalo W12	10.26
Chicago W13	10.26
Crawfordsville,Ind. M8	10.36
Donora,Pa. A7	10.26
Duluth A7	10.26
Fairfield,Ala. T2	10.26
Houston S5	10.51
Jacksonville,Fla. M8	10.36
Johnstown,Pa. B2	10.26
Joliet,Ill. A7	10.26
KansasCity,Mo. S5	10.51
Kokomo,Ind. C16	10.36
LosAngeles B3	11.05
Minnequa,Colo. C10	10.51
Pittsburg,Calif. C11	11.04
S.Chicago,Ill. R2	10.26
S.SanFrancisco C10	11.04
SparrowsPt.,Md. B2	10.36
Sterling,Ill. (37) N15	10.36

Coil No. 6500 Stand.

AlabamaCity,Ala. R2	$10.60
Atlanta A11	10.70
Bartonville,Ill. K4	10.70
Buffalo W12	10.60
Chicago W13	10.60
Crawfordsville,Ind. M8	10.70
Donora,Pa. A7	10.60
Duluth A7	10.60
Fairfield,Ala. T2	10.60
Houston S5	10.85
Jacksonville,Fla. M8	10.70
Johnstown,Pa. B2	10.60
Joliet,Ill. A7	10.60
KansasCity,Mo. S5	10.85
Kokomo,Ind. C16	10.70
LosAngeles B3	11.40
Minnequa,Colo. C10	10.85
Pittsburg,Calif. C11	11.40
S.Chicago,Ill. R2	10.60
S.SanFrancisco C10	11.40
SparrowsPt.,Md. B2	10.70
Sterling,Ill.(37) N15	10.70

Coil No. 6500 Interim

AlabamaCity,Ala. R2	$10.65
Atlanta A11	10.75
Bartonville,Ill. K4	10.75
Buffalo W12	10.65
Chicago W13	10.65
Crawfordsville,Ind. M8	10.75
Donora,Pa. A7	10.65
Duluth A7	10.65
Fairfield,Ala. T2	10.65
Houston S5	10.90
Jacksonville,Fla. M8	10.75
Johnstown,Pa. B2	10.75
Joliet,Ill. A7	10.65
KansasCity,Mo. S5	10.90
Kokomo,Ind. C16	10.75
LosAngeles B3	11.45
Minnequa,Colo. C10	10.90
Pittsburg,Calif. C11	11.45
S.Chicago,Ill. R2	10.65
S.SanFrancisco C10	11.45
SparrowsPt.,Md. B2	10.75
Sterling,Ill.(37) N15	10.75

BALE TIES, Single Loop

	Col.
AlabamaCity,Ala. R2	212
Atlanta A11	214
Bartonville,Ill. K4	214
Crawfordsville,Ind. M8	214
Donora,Pa. A7	212
Duluth A7	212
Fairfield,Ala. T2	212
Houston S5	217
Jacksonville,Fla. M8	214
Joliet,Ill. A7	212
KansasCity,Mo. S5	217
Kokomo,Ind. C16	214
Minnequa,Colo. C10	217
Pittsburg,Calif. C11	236
S.SanFrancisco C10	236
SparrowsPt.,Md. B2	214
Sterling,Ill.(7) N15	214

FENCE POSTS

Birmingham C15	172
ChicagoHts.,Ill. C2, I-2	172
Duluth A7	172
Franklin,Pa. F5	172
Huntington,W.Va. C15	172
Johnstown,Pa. B2	172
Marion,O. P11	172
Minnequa,Colo. C10	177
Sterling,Ill.(1) N15	172
Tonawanda,N.Y. B12	174

WIRE, Barbed

	Col.
AlabamaCity,Ala. R2	193**
Aliquippa,Pa. J5	190§
Atlanta A11	198*
Bartonville,Ill. K4	198
Crawfordsville,Ind. M8	198
Donora,Pa. A7	193†
Duluth A7	193†
Fairfield,Ala. T2	193†
Houston S5	198**
Jacksonville,Fla. M8	198
Johnstown,Pa. B2	196§
Joliet,Ill. A7	193†
KansasCity,Mo. S5	198**
Kokomo,Ind. C16	195†
Minnequa,Colo. C10	198**
Monessen,Pa. P7	196§
Pittsburg,Calif. C11	213†
Rankin,Pa. A7	193†
S.Chicago,Ill. R2	193**
S.SanFrancisco C10	213*
SparrowsPoint,Md. B2	198§
Sterling,Ill.(7) N15	198††

WOVEN FENCE, 9-15 Ga. Col.

Ala.City,Ala. R2	187**
Aliq'ppa,Pa.9-14½ga.J5	190§
Atlanta A11	192*
Bartonville,Ill. K4	192
Crawfordsville,Ind. M8	192
Donora,Pa. A7	187†
Duluth A7	187†
Fairfield,Ala. T2	187†
Houston S5	192**
Jacksonville,Fla. M8	192
Johnstown,Pa.(43) B2	190§
Joliet,Ill. A7	187†
KansasCity,Mo. S5	192**
Kokomo,Ind. C16	189†
Minnequa,Colo. C10	192**
Pittsburg,Calif. C11	210†
Rankin,Pa. A7	187†
S.Chicago,Ill. R2	187**
Sterling,Ill.(7) N15	192††

WIRE (16 gage)	**Stone**	**Stone An'ld**	**Galv.**
Ala.City,Ala.R2	17.15	18.70**	
Aliq'ppa,Pa. J5	.17.15	18.95	
Bartonville K4	..17.25	19.05	
Cleveland A7	...17.15	....	
Crawf'dsville M8	17.25	19.05	
Fostoria,O. S1	..17.65	19.20†	
Houston S5	....17.40	18.95**	
Jacksonville M8	..17.25	19.05	
Johnstown B2	..17.15	18.95§	
Kan.City,Mo. S5	17.40	....	
Kokomo C16	..17.25	18.80†	
Minnequa C10	17.40	18.95**	
P'lm'r,Mass.W12	17.45	19.00†	
Pitts.,Calif. C11	17.50	19.05†	
SparrowsPt. B2	17.25	19.05§	
Sterling(37)N15	17.25	19.05††	
Waukegan A7	..17.15	18.70†	
Worcester A7	..17.45	....	

WIRE, Merchant Quality (6 to 8 gage) An'ld Galv.

Ala.City,Ala. R2	8.65 9.20**
Aliquippa J5	....8.65 9.325§
Atlanta(48) A11	8.75 9.425*
Bartonville(48) K4	8.75 9.425
Buffalo W12	....8.65 9.20†
Cleveland A7	....8.65 ....
Crawfordsville M8	8.75 9.425
Donora,Pa. A7	..8.65 9.20†
Duluth A7	.....8.65 9.20†
Fairfield T2	.....8.65 9.20†
Houston(48) S5	.8.90 9.45**
Jacks'ville,Fla. M8	8.75 9.425
Johnstown B2(48)	8.65 9.325§
Joliet,Ill. A7	....8.65 9.20†
Kans.City(48) S5	8.90 9.45**
Kokomo C16	....8.75 9.30†
LosAngeles B3	9.60 10.275§
Minnequa C10	..8.90 9.45**
Monessen P7(48)	8.65 9.325§
Palmer,Mass. W12	8.95 9.50†
Pitts.Calif. C11	..9.60 10.15†
Rankin,Pa. A7	..8.65 9.20†
S.Chicago R2	....8.65 9.20**
S.SanFran. C10	..9.60 10.15**
Spar'wsPt.B2(48)	8.75 9.425§
Sterling(48) N15	8.90 9.575††
Sterling(1) (48)	8.80 9.475††
Struthers,O. Y1	..8.65 9.30‡
Worcester,Mass.A7	8.95 9.50†

Based on zinc price of: *13.50. †5c. §10c. ‡Less than 10c. ††10.50c. **Subject to zinc equalization extras.

FASTENERS

(Base discounts, full container quantity, per cent off list, f.o.b. mill)

BOLTS

Carriage, Machine Bolts
Full Size Body (cut thread)

½ in. and smaller:	
6 in. and shorter	49.0
Longer than 6 in.	39.0
⅝ in. thru 1 in.:	
6 in. and shorter	39.0
Longer than 6 in.	35.0
1⅛ in. and larger:	
All lengths	35.0

Undersized Body (rolled thread)

½ in. and smaller:	
6 in. and shorter	49.0

Carriage, Machine, Lag Bolts
Hot Galvanized:

½ in. and smaller:	
6 in. and shorter	29.0
Longer than 6 in.	15.0
⅝ in. and larger:	
All lengths	12.0

Lag Bolts (all diam.)

6 in. and shorter	49.0
Longer than 6 in.	39.0

Plow and Tap Bolts

½ in. and smaller by 6 in. and shorter.	49.0
Larger than ½ in. or longer than 6 in.	39.0

Blank Bolts 39.0
Step, Elevator, Tire Bolts 49.0

Stove Bolts, Slotted:

⅛ to ¼ in. incl..	
3 in. and shorter.	55.0
⅜ to ½ in., inclusive	55.0

NUTS

Reg. & Heavy Square Nuts:
All sizes 55.5

Square Nuts, Reg. & Heavy, Hot Galvanized:
All sizes 41.0

Hex Nuts, Reg. & Heavy, Hot Pressed:

¾ in. and smaller.	60.5
⅞ in. to 1 in., incl.	55.5
1⅛ in to 1½ in., incl.	58.5
1⅝ in. and larger	53.5

Hex Nuts, Reg. & Heavy, Cold Punched:

¾ in. and smaller.	60.5
⅞ in. to 1½ in., incl.	55.5
1⅝ in. and larger	53.5

Hex Nuts, All Types, Hot Galvanized:

¾ in. and smaller	46.5
⅞ in. to 1 in., incl.	41.5
1⅛ in to 1½ in., incl.	46.5

Hex Nuts, Semifinished, Heavy (Incl. Slotted):

¾ in. and smaller	60.5
⅞ in. to 1½ in., incl.	55.5
1⅝ in. and larger	53.5

Hex Nuts, Finished (Incl. Slotted and Castellated):

1 in. and smaller	63.0
1⅛ in. to 1½ in., incl.	59.0
1⅝ in. and larger	53.5

Semifinished Hex Nuts, Reg. (Incl. Slotted):

⅝ in. and smaller	60.5
¾ in. to 1 in., incl.	63.0
1⅛ to 1½ in., incl.	59.0
1⅝ in. and larger	53.5

CAP AND SETSCREWS
(Base discounts, packages, per cent off list, f.o.b. mill)

Hex Head Capscrews, Coarse or Fine Thread, Bright:

6 in. and shorter:	
⅝ in. and smaller	40.0
¾, ⅞, and 1 in. diam.	22.0
Longer than 6 in.:	
⅝ in. and smaller	8.0
¾, ⅞, and 1 in. diam.	+ 6.0

High Carbon, Heat Treated:
6 in. and shorter:

⅝ in. and smaller	26.0
¾, ⅞, and 1 in. diam.	3.0

Longer than 6 in.:

⅝ in. and smaller	+ 13.0
¾, ⅞, and 1 in. diam.	+ 32.0

Flat Head Capscrews:
¾ in. and smaller .. + 76.0

Setscrews, Square Head, Cup Point, Coarse Thread:
Through 1 in. diam.:
6 in. and shorter.. Net
Longer than 6 in. .. + 23

RIVETS

F.o.b. Cleveland and/or freight equalized with Pittsburgh, f.o.b. Chicago and/or freight equalized with Birmingham except where equalization is too great.
Structural ½ in., larger 12.25
⅞ in. under: List less 19%

BOILER TUBES

Net bas c.l. prices, dollars per 100 ft, mill; minimum wall thickness, cut lengths 10 to 24 ft, inclusive.

O.D. In.	B.W. Gage	Seamless H.R.	Seamless C.D.	Elec. Weld H.R.
1	13	....	25.98	23.54
1¼	13	....	30.78	23.36
1½	13	29.03	34.01	25.83
1¾	13	34.29	40.18	30.51
2	13	38.44	45.05	34.20
2¼	13	43.29	50.75	38.52
2½	12	46.99	55.06	41.81
2½	12	51.76	60.65	46.05
2¾	12	56.04	65.67	49.88
3	12	59.76	70.03	53.19

RAILWAY MATERIALS

Rails	Standard No. 1	Standard No. 2	Tee Rails All	Tee Rails 60-lb No. 2 Under
Bessemer,Pa. U5	5.525	5.425	....	6.50
Ensley,Ala. T2	5.525	5.425	....	6.50
Fairfield,Ala. T2	....	....	....	6.50
Gary,Ind. U5	5.525	5.425	....	....
Huntington,W.Va. C15	....	....	....	6.50
IndianaHarbor,Ind. I-2	5.525	5.425	5.475	....
Johnstown,Pa. B2	....	....	....	(16)6.50
Lackawanna,N.Y. B2	5.525	5.425	....	6.50
Minnequa,Colo. C10	5.525	5.425	....	7.00
Steelton,Pa. B2	5.525	5.425	....	....
Williamsport,Pa. S19	....	....	....	6.50

TIE PLATES

Fairfield,Ala. T2	6.60
Gary,Ind. U5	6.60
Ind.Harbor,Ind. I-2	6.60
Lackawanna,N.Y. B2	6.60
Minnequa,Colo. C10	6.60
Seattle B3	6.75
Steelton,Pa. B2	6.60
Torrance,Calif. C11	6.75

JOINT BARS

Bessemer,Pa. U5	6.975
Fairfield,Ala. T2	6.975
Ind.Harbor,Ind. I-2	6.975
Joliet,Ill. T5	6.975
Lackawanna,N.Y. B2	6.975
Minnequa,Colo. C10	6.975
Steelton,Pa. B2	6.975

AXLES

Ind.Harbor,Ind. S13	8.775
Johnstown,Pa. B2	8.775

TRACK BOLTS, Untreated

Cleveland R2	14.75
KansasCity,Mo. S5	14.75
Lebanon,Pa. B2	14.75
Minnequa,Colo. C10	14.75
Pittsburgh P14	14.75
Seattle B3	15.25

SCREW SPIKES

Lebanon,Pa. B2	14.50

STANDARD TRACK SPIKES

Fairfield,Ala. T2	9.75
Ind.Harbor,Ind. I-2, Y1	9.75
KansasCity,Mo. S5	9.75
Lebanon,Pa. B2	9.75
Minnequa,Colo. C10	9.75
Pittsburgh J5	9.75
Seattle B3	10.25
S.Chicago,Ill. R2	9.75
Struthers,O. Y1	9.75
Youngstown R2	9.75

Footnotes

(1) Chicago base.
(2) Angles, flats, bands.
(3) Merchant.
(4) Reinforcing.
(5) 1⅛ to under 1 7/16 in.; 1 7/16 to under 1 15/16 in., 6.70c; 1 15/16 to 8 in., inclusive, 7.05c.
(6) Chicago or Birm. base.
(7) Chicago base 2 cols. lower.
(8) 16 Ga. and heavier.
(9) Merchant quality; add 0.35c for special quality.
(10) Pittsburgh base.
(11) Cleveland & Pitts. base.
(12) Worcester, Mass. base.
(13) Add 0.25c for 17 Ga. & heavier.
(14) Gage 0.143 to 0.249 in.; for gage 0.142 and lighter, 5.80c.
(15) ⅜" and thinner.
(16) 40 lb and under.
(17) Flats only; 0.25 in. & heavier.
(18) To dealers.
(19) Chicago & Pitts. base.
(21) New Haven, Conn. base.
(22) Deld. San Francisco Bay area.
(23) Special quality.
(24) Deduct 0.15c, finer than 15 Ga.
(25) Bar mill bands.
(27) Bar mill sizes.
(28) Bonderized.
(29) Youngstown base.
(30) Sheared; for universal mill add 0.45c.
(31) Widths over ⅝ in.; 7.60c, for widths ⅝ in. and under by 0.125 in. and thinner.
(32) Buffalo base.
(33) To jobbers, deduct 20c.
(34) 9.60c for cut lengths.
(35) 72" and narrower.
(36) 54" and narrower.
(37) Chicago base, 10 points lower.
(38) 14 Ga. & lighter; 48" & narrower.
(39) 48" and narrower.
(40) Lighter than 0.035"; 0.035" and heavier, 0.25c higher.
(41) 9.10c for cut lengths.
(42) Mill lengths, f.o.b. mill; deld. in mill zone or within switching limits, 5.685c.
(43) 9-14½ Ga.
(44) To fabricators.
(48) 6-7 Ga.
(49) 3½ in. and smaller rounds; 9.30c, over 3½ in. and other shapes.

SEAMLESS STANDARD PIPE, Threaded and Coupled

Carload discounts from list, %

Size—Inches	⅛		¼		⅜		½		¾		1		1¼	
List Per Ft	37c		58.5c		76.5c		92c		$1.09		$1.48		$1.93	
Pounds Per Ft	3.68		5.82		7.62		9.20		10.89		14.81		19.18	
	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*
Aliquippa, Pa. J5	+9.25	+24.25	+2.75	+19.5	+0.25	+17	1.25	+15.5	1.25	+15.5	1	+15.75	3.5	+13.25
Ambridge, Pa. N2	+9.25	....	+2.75	....	+0.25	....	1.25	....	1.25	....	1	....	3.5	....
Lorain, O. N3	+9.25	+24.25	+2.75	+19.5	+0.25	+17	1.25	+15.5	1.25	+15.5	1	+15.75	3.5	+13.25
Youngstown Y1	+9.25	+24.25	+2.75	+19.5	+0.25	+17	1.25	+15.5	1.25	+15.5	1	+15.75	3.5	+13.25

ELECTRIC STANDARD PIPE, Threaded and Coupled

Carload discounts from list, %

Youngstown R2	+9.25	+24.25	+2.75	+19.5	+0.25	+17	1.25	+15.5	1.25	+15.5	1	+15.75	3.5	+13.25

BUTTWELD STANDARD PIPE, Threaded and Coupled

Carload discounts from list, %

Size—Inches	⅛		¼		⅜		½		¾		1		1¼	
List Per Ft	5.5c		6c		6c		8.5c		11.5c		17c		23c	
Pounds Per Ft	0.24		0.42		0.57		0.85		1.13		1.68		2.28	
	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*
Aliquippa, Pa. J5	....	....	....	....	....	....	5.25	+10	8.25	+6	11.75	+1.5	14.25	+0.75
Alton, Ill. L1	....	....	....	....	....	....	3.25	+12	6.25	+8	9.75	+3.5	12.25	+2.75
Benwood, W. Va. W10	4.5	+22	+7.5	+31	+18	+39.5	5.25	+10	8.25	+6	11.75	+1.5	14.25	+0.75
Butler, Pa. F6	5.5	+21	+6.5	+30	+17	+38.5	....	....	....	....	....	....	....	....
Etna, Pa. N2	....	....	....	....	....	....	5.25	+10	8.25	+6	11.75	+1.5	14.25	+0.75
Fairless, Pa. N3	....	....	....	....	....	....	3.25	+12	6.25	+8	9.75	+3.5	12.25	+2.75
Fontana, Calif. K1	....	....	....	....	....	....	+8.25	+23.5	+5.25	+19.5	+1.75	+15	0.75	+14.25
Indiana Harbor, Ind. Y1	....	....	....	....	....	....	4.25	+11	7.25	+7	10.75	+2.5	13.25	+3.25
Lorain, O. N3	....	....	....	....	....	....	5.25	+10	8.25	+6	11.75	+1.5	14.25	+0.75
Sharon, Pa. S4	5.5	+21	+6.5	+30	+17	+38.5	....	....	....	....	....	....	....	....
Sharon, Pa. M6	....	....	....	....	....	....	5.25	+10	8.25	+6	11.75	+1.5	14.25	+0.75
Sparrows Pt., Md. B2	3.5	+23	+8.5	+32	+19	+40.5	3.25	+12	6.25	+8	9.75	+3.5	12.25	+2.75
Wheatland, Pa. W9	5.5	+21	+6	+30	+17	+38.5	5.25	+10	8.25	+6	11.75	+1.5	14.25	+0.75
Youngstown R2, Y1	....	....	....	....	....	....	5.25	+10	8.25	+6	11.75	+1.5	14.25	+0.75

Size—Inches	1½		2		2½		3		3½		4	
List Per Ft	27.5c		37c		58.5c		76.5c		92c		$1.09	
Pounds Per Ft	2.73		3.68		5.82		7.62		9.20		10.89	
	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*
Aliquippa, Pa. J5	14.75	0.25	15.25	0.75	16.75	0.5	16.75	0.5	....	....	....	....
Alton, Ill. L1	12.75	+1.75	13.25	+1.25	14.75	+1.5	14.75	+1.5	....	....	....	....
Benwood, W. Va. W10	14.75	0.25	15.25	0.75	16.75	0.5	16.75	0.5	6.25	+10.5	6.25	+10.5
Etna, Pa. N2	14.75	0.25	15.25	0.75	16.75	0.5	16.75	0.5	6.25	+10.5	6.25	+10.5
Fairless, Pa. N3	12.75	+1.75	13.25	+1.25	14.75	+1.5	14.75	+1.5	4.25	+12.5	4.25	+12.5
Fontana, Calif. K1	1.25	+13.25	1.75	+12.75	3.25	+13	3.25	+13	+7.25	+24	+7.25	+24
Indiana Harbor, Ind. Y1	13.75	+0.75	14.25	+0.25	15.75	+0.5	15.25	+0.5	5.25	+11.5	5.25	+11.5
Lorain, O. N3	14.75	0.25	15.25	0.75	16.75	0.5	16.75	0.5	....	....	....	....
Sharon, Pa. M6	14.75	0.25	15.25	0.75	16.75	0.5	16.75	0.5	....	....	....	....
Sparrows Pt., Md. B2	12.75	+1.75	13.25	+1.25	14.75	+1.5	14.75	+1.5	4.25	+12.5	4.25	+12.5
Wheatland, Pa. W9	14.75	0.25	15.25	0.75	16.75	0.5	16.75	0.5	6.25	+10.5	6.25	+10.5
Youngstown R2, Y1	14.75	0.25	15.25	0.75	16.75	0.5	16.75	0.5	6.25	+10.5	6.25	+10.5

*Galvanized pipe discounts based on current price of zinc (10.00c, East St. Louis).

Stainless Steel

Representative prices, cents per pound; subject to current lists of extras

AISI Type	—Rerolling— Ingot	Slabs	Forging Billets	H.R. Strip	H.R. Rods; C.F. Wire	Bars; Structural Shapes	Plates	Sheets	C.R. Strip; Flat Wire
201	22.00	27.00	....	36.00	40.00	42.00	44.25	48.50	45.00
202	23.75	30.25	36.50	39.00	40.75	43.00	45.00	49.25	49.25
301	23.25	28.00	37.25	37.25	42.00	44.25	46.25	51.25	47.50
302	25.25	31.50	38.00	40.50	42.75	45.00	47.25	52.00	52.00
302B	25.50	32.75	40.75	45.75	45.00	47.25	49.50	57.00	57.00
303	....	32.00	41.00	46.00	45.50	48.00	50.00	56.75	56.75
304	27.00	33.25	40.50	44.25	45.25	47.75	50.75	55.00	55.00
304L	....	....	48.25	51.50	53.00	55.50	58.50	63.25	62.75
305	28.50	36.75	42.50	47.50	45.25	47.75	51.25	58.75	58.75
308	30.75	38.25	47.25	50.25	52.75	55.75	60.25	63.00	63.00
309	39.75	49.50	57.75	64.50	63.75	67.00	71.00	80.50	80.50
310	49.75	61.50	78.00	84.25	86.50	91.00	92.75	96.75	96.75
314	....	....	77.50	....	86.50	91.00	92.75	99.00	104.25
316	39.75	49.50	62.25	69.25	69.25	73.00	76.75	80.75	80.75
316L	....	55.50	70.00	76.50	77.00	80.75	84.50	89.25	88.50
317	48.00	60.00	76.75	88.25	86.25	90.75	93.50	101.00	101.00
321	32.25	40.00	47.00	53.50	52.50	55.50	59.75	65.50	65.50
330	....	....	106.75	....	95.25	106.75	105.50	108.00	149.25
18-8 CbTa	37.00	46.50	55.75	63.50	61.50	64.75	69.75	79.25	79.25
403	....	....	32.00	....	35.75	37.75	40.25	48.25	48.25
405	19.50	25.50	29.75	36.00	33.50	35.25	37.50	46.75	46.75
410	16.75	21.50	28.25	31.00	32.00	33.75	35.00	40.25	40.25
416	....	....	28.75	....	32.50	34.25	36.00	48.25	48.25
420	26.00	33.50	34.25	41.75	39.25	41.25	45.25	52.00	62.00
430	17.00	21.75	28.75	32.00	32.50	34.25	36.00	40.75	40.75
430F	....	....	29.50	....	33.00	34.75	36.75	51.75	42.00
431	....	28.75	37.75	....	42.00	44.25	46.00	56.00	56.00
446	....	....	39.25	59.00	44.25	46.50	47.75	70.00	70.00

Stainless Steel Producers Are: Allegheny Ludlum Steel Corp.; American Steel & Wire Div., U. S. Steel Corp.; Anchor Drawn Steel Co., division of Vanadium-Alloys Steel Co.; Armco Steel Corp.; Babcock & Wilcox Co.; Bethlehem Steel Co.; J. Bishop & Co.; A. M. Byers Co.; G. O. Carlson Inc.; Carpenter Steel Co.; Carpenter Steel Co. of New England; Charter Wire Products; Crucible Steel Co. of America; Damascus Tube Co.; Dearborn Div., Sharon Steel Corp.; Wilbur B. Driver Co.; Driver-Harris Co.; Eastern Stainless Steel Corp.; Firth Sterling Inc.; Fort Wayne Metals Inc.; Green River Steel Corp., subsidiary of Jessop Steel Co.; Indiana Steel & Wire Co.; Ingersoll Steel Div., Borg-Warner Corp.; Ellwood Ivins Steel Tube Works Inc.; Jessop Steel Co.; Johnson Steel & Wire Co. Inc.; Stainless Steel Div., Jones & Laughlin Steel Corp.; Joslyn Stainless Steels, division of Joslyn Mfg. & Supply Co.; Latrobe Steel Co.; Lukens Steel Co.; Maryland Fine & Specialty Wire Co. Inc.; McLouth Steel Corp.; Metal Forming Corp.; Midvale-Heppenstall Co.; National Standard Co.; National Tube Div., U. S. Steel Corp.; Pacific Tube Co.; Page Steel & Wire Div., American Chain & Cable Co. Inc.; Pittsburgh Rolling Mills Inc.; Republic Steel Corp.; Riverside-Alloy Metal Div., H. K. Porter Company Inc.; Rodney Metals Inc.; Sawhill Tubular Products Inc.; Sharon Steel Corp.; Simonds Saw & Steel Co.; Specialty Wire Co. Inc.; Standard Tube Co.; Superior Steel Div., Copperweld Steel Co.; Superior Tube Co.; Swepco Tube Corp.; Techalloy Co. Inc.; Timken Roller Bearing Co.; Trent Tube Co., subsidiary of Crucible Steel Co. of America; Tube Methods Inc.; Ulbrich Stainless Steels Inc.; U. S. Steel Corp.; Universal-Cyclops Steel Corp.; Vanadium-Alloys Steel Co.; Wall Tube & Metal Products Co.; Wallingford Steel Co., subsidiary of Allegheny Ludlum Steel Corp.; Washington Steel Corp.

Clad Steel

	Plates—Carbon Base 5%	10%	15%	20%	Sheets Carbon Base 20%
Stainless					
302	....	....	....	....	37.50
304	34.70	37.95	42.25	46.70	39.75
304L	36.90	40.55	45.10	49.85	....
316	40.35	44.50	49.50	54.50	58.25
316L	45.05	49.35	54.70	60.10	....
316 Cb	47.30	53.80	61.45	69.10	....
321	36.60	40.05	44.60	49.30	47.25
347	38.25	42.40	47.55	52.80	57.00
405	28.60	29.85	33.35	36.85	....
410	28.15	29.55	33.10	36.70	....
430	28.30	29.80	33.55	37.25	....
Inconel	48.00	59.55	70.15	80.85	....
Nickel	41.65	51.95	62.30	72.70	....
Nickel, Low Carbon	41.95	52.60	63.30	74.15	....
Monel	43.35	53.55	63.80	74.05	....
Copper*	....	....	....	....	46.00

	Strip, Carbon Base —Cold Rolled— 10%	Both Sides
Copper*	33.10	38.75

*Deoxidized. Production points: Stainless-clad sheets, New Castle, Ind. I-4; stainless-clad plates, Claymont, Del. C22, Coatesville, Pa. L7, New Castle, Ind. I-4, and Washington, Pa. J3; nickel, inconel, monel-clad plates, Coatesville L7; copper-clad strip, Carnegie, Pa. S18.

Tool Steel

Grade	$ per lb	Grade	$ per lb
Regular Carbon	0.305	Cr-Hot Work	0.475
Extra Carbon	0.360	W-Cr Hot Work	0.500
Special Carbon	0.475	V-Cr Hot Work	0.520
Oil Hardening	0.475	Hi-Carbon-Cr	0.925

Grade by Analysis (%) W	Cr	V	Co	Mo		$ per lb
20.25	4.25	1.6	12.25	...	.....	4.285
18.25	4.25	1	4.75	...	.....	2.500
18	4	2	9	...	.....	2.870
18	4	2	....	...	.....	1.960
18	4	1	....	...	.....	1.795
9	3.5	..	....	...	.....	1.395
13.5	4	3	....	...	.....	2.060
13.75	3.75	2	5	...	.....	2.440
6.4	4.5	1.9	....	5	.....	1.300
6	4	3	....	6	.....	1.545
1.5	4	1	....	8.5	.....	1.155

Tool steel producers include: A4, A8, B2, B8, C4, C9, C13, C18, F2, J3, L3, M14, S8, U4, V2, and V3.

Pig Iron

F.o.b. furnace prices in dollars per gross ton, as reported to STEEL. Minimum delivered prices are approximate and do not include 3% federal transportation tax.

	Basic	No. 2 Foundry	Malle-able	Besse-mer
Birmingham District				
Birmingham R2	62.00-	62.50‡	....	....
Birmingham U6	....	62.50‡	66.50	....
Woodward,Ala. W15	62.00**	62.50‡	66.50	....
Cincinnati, deld.	....	70.20	....	....
Buffalo District				
Buffalo H1, R2	66.00	66.50	67.00	67.50
N.Tonawanda,N.Y. T9	....	66.50	67.00	67.50
Tonawanda,N.Y. W12	66.00	66.50	67.00	67.50
Boston, deld.	77.29	77.79	78.29	....
Rochester,N.Y., deld.	69.02	69.52	70.02	....
Syracuse,N.Y., deld.	70.12	70.62	71.12	....
Chicago District				
Chicago I-3	66.00	66.50	66.50	67.00
S.Chicago,Ill. R2	66.00	66.50	66.50	67.00
S.Chicago,Ill. W14	66.00	....	66.50	67.00
Milwaukee, deld.	69.02	69.52	69.52	70.02
Muskegon,Mich., deld.	....	74.52	74.52	....
Cleveland District				
Cleveland R2, A7	66.00	66.50	66.50	67.00
Akron,Ohio, deld.	69.12	69.62	69.62	70.12
Mid-Atlantic District				
Birdsboro,Pa. B10	68.00	68.50	69.00	69.50
Chester,Pa. P4	68.00	68.50	69.00	....
Swedeland,Pa. A3	68.00	68.50	69.00	69.50
NewYork, deld.	....	75.50	76.00	....
Newark,N.J., deld.	72.69	73.19	73.69	74.19
Philadelphia, deld.	70.41	70.91	71.41	71.99
Troy,N.Y. R2	68.00	68.50	69.00	69.50
Pittsburgh District				
NevilleIsland,Pa. P6	66.00	66.50	66.50	67.00
Pittsburgh (N&S sides), Aliquippa, deld.	....	67.95	67.95	68.48
McKeesRocks,Pa., deld.	....	67.60	67.60	68.13
Lawrenceville,Homestead, Wilmerding,Monaca,Pa., deld.	....	68.26	68.26	68.79
Verona,Trafford,Pa., deld.	68.29	68.82	68.82	69.35
Brackenridge,Pa., deld.	68.60	69.10	69.10	69.63
Midland,Pa. C18	66.00	....	....	....
Youngstown District				
Hubbard,Ohio Y1	....	....	66.50	....
Sharpsville,Pa. S6	66.00	....	66.50	67.00
Youngstown Y1	....	....	66.50	67.00
Mansfield,Ohio, deld.	70.90	....	71.40	71.90
Duluth I-3	66.00	66.50	66.50	67.00
Erie,Pa. I-3	66.00	66.50	66.50	67.00
Everett,Mass. E1	67.50	68.00	68.50	....
Fontana,Calif. K1	75.00	75.50	....	....
Geneva,Utah C11	66.00	66.50	....	....
GraniteCity,Ill. G4	67.90	68.40	68.90	....
Ironton,Utah C11	66.00	66.50	....	....
Minnequa,Colo. C10	68.00	68.50	69.00	....
Rockwood, Tenn. T3	....	62.50‡	66.50	....
Toledo,Ohio I-3	66.00	66.50	66.50	67.00
Cincinnati, deld.	72.54	73.04	....	....

**Phos. 0.70-0.90%; Phos. 0.30-0.69%, $63.
‡Phos. 0.70-0.90%; Phos. 0.30-0.69%, $63.50.

PIG IRON DIFFERENTIALS

Silicon: Add 75 cents per ton for each 0.25% Si or percentage thereof over base grade, 1.75-2.25%, except on low phos. iron on which base is 1.75-2.00%.

Manganese: Add 50 cents per ton for each 0.25% manganese over 1% or portion thereof.

Nickel: Under 0.50% no extra; 0.50-0.74%, inclusive, add $2 per ton and each additional 0.25%, add $1 per ton.

BLAST FURNACE SILVERY PIG IRON, Gross Ton

(Base 6.00-6.50% silicon; add $1 for each 0.50% silicon or portion thereof over the base grade within a range of 6.50 to 11.50%; starting with silicon over 11.50% add $1.50 per ton for each 0.50% silicon or portion thereof up to 14%; add $1 for each 0.50% Mn over 1%)

Jackson,Ohio I-3, J1	$78.00
Buffalo H1	79.25

ELECTRIC FURNACE SILVERY IRON, Gross Ton

(Base 14.01-14.50% silicon; add $1 for each 0.5% Si to 18%; $1.25 for each 0.50% Mn over 1%; $2 per gross ton premium for 0.045% max P)

CalvertCity,Ky. P15	$99.00
NiagaraFalls,N.Y. P15	99.00
Keokuk,Iowa Open-hearth & Fdry, $9 freight allowed K2	103.50
Keokuk,Iowa O.H. & Fdry, 12½ lb piglets, 16% Si, max fr'gt allowed up to $9, K2	106.50

LOW PHOSPHORUS PIG IRON, Gross Ton

Lyles,Tenn. T3 (Phos. 0.035% max)	$78.50
Rockwood,Tenn. T3 (Phos. 0.035% max)	78.50
Troy,N.Y. R2 (Phos. 0.035% max)	74.00
Philadelphia, deld.	82.67
Cleveland A7 (Intermediate) (Phos. 0.036-0.075% max)	71.00
Duluth I-3 (Intermediate) (Phos. 0.036-0.075% max)	71.00
Erie,Pa. I-3 (Intermediate) (Phos. 0.036-0.075% max)	71.00
NevilleIsland,Pa. P6 (Intermediate) (Phos. 0.036-0.075% max)	71.00

Warehouse Steel Products

Representative prices, per pound, subject to extras, f.o.b. warehouse. City delivery charges are 15 cents per 100 lb except: Moline, Norfolk, Richmond, Washington, 20 cents; Baltimore, Boston, Los Angeles, New York, Philadelphia, Portland, Spokane, San Francisco, 10 cents; Atlanta, Chattanooga, Houston, Seattle, no charge.

	SHEETS				STRIP	BARS			Standard Structural Shapes	PLATES	
	Hot-Rolled	Cold-Rolled	Gal. 10 Ga.†	Stainless Type 302	Hot-Rolled*	H.R. Rounds	C.F. Rds.‡	H.R. Alloy 4140††[5]		Carbon	Floor
Atlanta	8.59§	9.86§	....	....	8.64	9.01	10.68	....	9.05	8.97	10.90
Baltimore	8.28	8.88	9.68	....	8.76	9.06	11.34 #	15.18	9.19	8.66	10.14
Birmingham	8.18	9.45	11.07	....	8.23	8.60	10.57	....	8.64	8.56	10.70
Boston	9.38	10.44	11.45	53.50	9.42	9.73	12.90 #	15.28	9.63	9.72	11.20
Buffalo	8.25	9.00	11.07	55.98	8.50	8.80	11.00 #	15.00	8.90	8.90	10.45
Chattanooga	8.35	9.69	9.65	....	8.40	8.77	10.46	....	8.88	8.80	10.66
Chicago	8.20	9.45	10.10	53.00	8.23	8.60	8.80	14.65	8.64	8.56	9.88
Cincinnati	8.34	9.48	10.10	52.43	8.54	8.92	11.06	14.86	9.18	8.93	10.21
Cleveland	8.18	9.45	10.20	52.33	8.33	8.69	10.80 #	14.74	9.01	8.79	10.11
Dallas	7.50	8.80	....	....	7.65	7.60	11.01	....	9.00	9.45	10.70
Denver	9.38	11.75	....	....	9.41	9.78	11.10	....	7.65	8.45	9.70
Detroit	8.43	9.70	10.45	56.50	8.58	8.90	9.15	14.91	9.18	8.91	10.13
Erie, Pa.	8.20	9.45	9.95[10]	....	8.50	8.75	9.05[10]	....	9.00	8.85	10.10
Houston	7.10	8.40	8.45	54.32	7.25	7.20	11.10	13.50	7.25	8.05	9.30
Jackson, Miss.	8.52	9.79	....	....	8.57	8.94	10.68	....	8.97	8.90	10.74
Los Angeles	8.45	9.40	11.80	57.60	8.90	8.75	12.10	16.10	8.70	8.85	11.00
Memphis, Tenn.	8.55	9.80	....	....	8.60	8.97	11.96 #	....	9.01	8.93	10.56
Milwaukee	8.33	9.58	10.23	....	8.36	8.73	9.03	14.78	8.85	8.69	10.01
Moline, Ill.	8.55	9.80	10.45	....	8.58	8.95	9.15	....	8.99	8.91	....
New York	8.87	10.13	10.56	53.08	9.31	9.57	12.76 #	15.09	9.35	9.43	10.66
Norfolk, Va.	8.40	....	....	....	9.10	9.10	12.00	....	9.40	8.85	10.35
Philadelphia	8.00	8.90	9.92	52.69	8.70	8.65	11.51 #	15.01	8.50	8.75	9.75**
Pittsburgh	8.18	9.45	10.45	52.00	8.33	8.60	10.80 #	14.65	8.64	8.56	9.88
Portland, Oreg.	8.50	11.20	11.55	57.38	9.55	8.65	14.50	15.95	8.65	8.30	11.50
Richmond, Va.	8.40	....	10.40	....	9.10	9.00	....	....	9.40	8.85	10.35
St. Louis	8.54	9.79	10.36	....	8.59	8.97	9.41	15.01	9.10	8.93	10.25
St. Paul	8.79	10.04	10.71	....	8.84	9.21	9.66	....	9.38	9.30	10.49
San Francisco	9.35	10.75	11.00	55.10	9.45	9.70	13.00 #	16.00	9.50	9.60	12.00
Seattle	9.95	11.15	12.20	57.38	10.00	10.10	14.05	16.35	9.80	9.70	12.10
South'ton, Conn.	9.07	10.33	10.71	....	9.48	9.74	....	....	9.57	9.57	10.91
Spokane	9.95	11.15	12.20	57.38	10.00	10.10	14.05	16.35	9.80	9.70	12.10
Washington	8.88	....	....	....	9.36	9.56	10.94	....	9.79	9.26	10.74

*Prices do not include gage extras; †prices include gage and coating extras; ‡includes 35-cent bar quality extras; §42 in. and under; **¼ in. and heavier; ††as annealed; ‡‡over 4 in.; §§over 3 in.; #1 in. round C-1018.

Base quantities, 2000 to 4999 lb except as noted; cold-rolled strip and cold-finished bars, 2000 lb and over except in Seattle, 2000 to 9999 lb, and in Los Angeles, 6000 lb and over; stainless sheets, 8000 lb except in Chicago, New York, Boston, Seattle, Portland, Oreg. 10,000 lb and in San Francisco, 2000 to 4999 lb; hot-rolled products on West Coast, 2000 to 9999 lb, except in Portland, Oreg., 1000 to 9999 lb; [3]—400 to 9999 lb; [8]—1000 to 1999 lb; [8]—2000 to 3999 lb; [10]—2000 lb and over.

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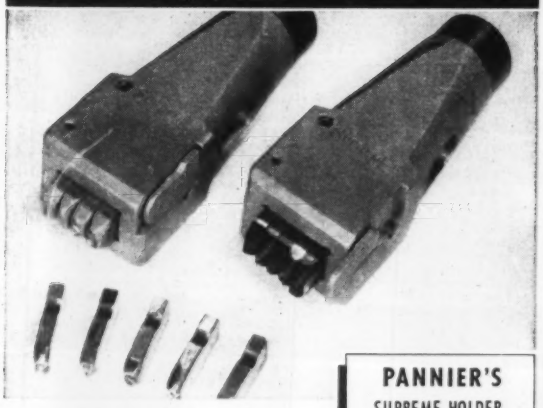

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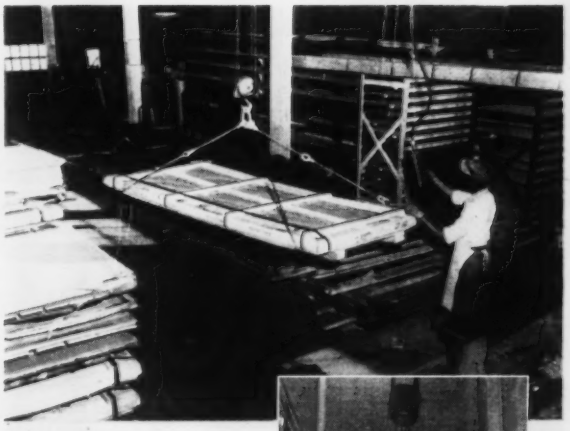

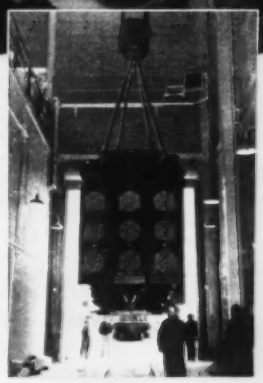

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Yellow Strand Braided Safety Slings lift this heavy electric transformer. B & B Slings are designed for great strength and flexibility — yet are light in weight, easily handled.

. . . protect your investment with Yellow Strand Braided Safety Slings

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Refractories

Fire Clay Brick (per 1000)

High-Heat Duty: Ashland, Grahn, Hayward, Hitchins, Haldeman, Olive Hill, Ky., Athens, Troup, Tex., Beech Creek, Clearfield, Curwensville, Lock Haven, Lumber, Orviston, West Decatur, Winburne, Snow Shoe, Pa., Bessemer, Ala., Farber, Mexico, St. Louis, Vandalia, Mo., Ironton, Oak Hill, Parrall, Portsmouth, Ohio, Ottawa, Ill., Stevens Pottery, Ga., $135; Salina, Pa., $140; Niles, Ohio, $138; Cutler, Utah, $165.

Super-Duty: Ironton, Ohio, Vandalia, Mo., Olive Hill, Ky., Clearfield, Salina, Winburne, Snow Shoe, Pa., New Savage, Md., St. Louis, $175; Stevens Pottery, Ga., $185; Cutler, Utah, $233.

Silica Brick (per 1000)

Standard: Alexandria, Claysburg, Mt. Union, Sproul, Pa., Ensley, Ala., Pt. Matilda, Pa., Portsmouth, Ohio, Hawstone, Pa., $150; Warren, Niles, Windham, Ohio, Hays, Latrobe, Morrisville, Pa., $155; E. Chicago, Ind., Joliet, Rockdale, Ill., $160; Lehigh, Utah, $175; Los Angeles, $180.

Super-Duty: Sproul, Hawstone, Pa., Niles, Warren, Windham, Ohio, Leslie, Md., Athens, Tex., $157; Morrisville, Hays, Latrobe, Pa., $160; E. Chicago, Ind., $167; Curtner, Calif., $182.

Semisilica Brick (per 1000)

Clearfield, Pa., $140; Philadelphia, $137; Woodbridge, N. J., $135.

Ladle Brick (per 1000)

Dry Pressed: Alsey, Ill., Chester, New Cumberland, W. Va., Freeport, Johnstown, Merrill Station, Vanport, Pa., Mexico, Vandalia, Mo., Wellsville, Irondale, New Salisbury, Ohio, $96.75; Clearfield, Pa., Portsmouth, Ohio, $102.

High-Alumina Brick (per 1000)

50 *Per Cent:* St. Louis, Mexico, Vandalia, Mo., $235; Danville, Ill., $238; Philadelphia, Clearfield, Pa., $230; Orviston, Snow Shoe, Pa., $245.

60 *Per Cent:* St. Louis, Mexico, Vandalia, Mo., $295; Danville, Ill., $298; Clearfield, Orviston, Snow Shoe, Pa., $305; Philadelphia, $310.

70 *Per Cent:* St. Louis, Mexico, Vandalia, Mo., $335; Danville, Ill., $338; Clearfield, Orviston, Snow Shoe, Pa., $345; Philadelphia, $350.

Sleeves (per 1000)

Reesdale, Johnstown, Bridgeburg, Pa., St. Louis, $188.

Nozzles (per 1000)

Reesdale, Johnstown, Bridgeburg, Pa., St. Louis, $310.

Runners (per 1000)

Reesdale, Johnstown, Bridgeburg, Pa., $234.

Dolomite (per net ton)

Domestic, dead-burned, bulk, Billmeyer, Blue Bell, Williams, Plymouth Meeting, York, Pa., Millville, W. Va., Bettsville, Millersville, Martin, Woodville, Gibsonburg, Narlo, Ohio, $16.75; Thornton, McCook, Ill., $17; Dolly Siding, Bonne Terre, Mo., $15.

Magnesite (per net ton)

Domestic, dead-burned, ½ in. grains with fines: Chewelah, Wash., Luning, Nev., $46; ⅜ in. grains with fines: Baltimore, $73.

Fluorspar

Metallurgical grades, f.o.b. shipping point in Ill., Ky., net tons, carloads, effective CaF_2 content 72.5%, $37-41; 70%, $36.40; 60%, $33-36.50. Imported, net tons, f.o.b. cars point of entry, duty paid, metallurgical grade: European, $33-34; Mexican, all rail, duty paid, $25.25-25.75; barge, Brownsville, Tex., $27.25-27.75.

Ores

Lake Superior Iron Ore

(Prices effective for the 1958 shipping season, gross ton, 51.50% iron natural, rail of vessel, lower lake ports.)

Mesabi bessemer	$11.60
Mesabi nonbessemer	11.45
Old Range bessemer	11.85
Old Range nonbessemer	11.70
Open-hearth lump	12.70
High phos.	11.45

The foregoing prices are based on upper lake rail freight rates, lake vessel freight rates, handling and unloading charges, and taxes thereon, which were in effect Jan. 30, 1957, and increases or decreases after that date are absorbed by the seller.

Eastern Local Iron Ore

Cents per unit, deld. E. Pa.

New Jersey, foundry and basic concentrates	62-64% 25.00-27.00

Foreign Iron Ore

Cents per unit, c.i.f. Atlantic ports

Swedish basic, 65%	25.00
N. African hematite (spot)	nom.
Brazilian iron ore, 68-69%	27.00

Tungsten Ore

Net ton, unit

Foreign wolframite, good commercial quality	$11.00-12.00*
Domestic, concentrates f.o.b. milling points	18.00-20.00

*Before duty.

Manganese Ore

Mn 46-48%, Indian (export tax included), $134.40 per long ton unit, c.i.f. U. S. ports, duty for buyer's account; other than Indian, nominal; contracts by negotiation.

Chrome Ore

Gross ton, f.o.b. cars New York, Philadelphia, Baltimore, Charleston, S. C., plus ocean freight differential for delivery to Portland, Oreg., Tacoma, Wash.

Indian and Rhodesian

48% 3:1	$46.00-48.00
48% 2.8:1	42.00-44.00
48% no ratio	32.00-34.00

South African Transvaal

48% no ratio	$32.00-34.00
44% no ratio	24.00-25.00

Turkish

48% 3:1	$51.00-55.00

Domestic

Rail nearest seller

18% 3:1	39.00

Molybdenum

Sulfide concentrate, per lb of Mo content, mines, unpacked	$1.23

Antimony Ore

Per short ton unit of Sb content, c.i.f. seaboard	
50-55%	$2.25-2.40
60-65%	2.60-3.00

Vanadium Ore

Cents per lb V_2O_5

Domestic	31.00

Metal Powder

(Per pound f.o.b. shipping point in ton lots for minus 100 mesh, except as noted)

	Cents
Sponge Iron, Swedish: deld. east of Mississippi River, ocean bags 23,000 lb and over.. F.o.b. Riverton or Camden, N. J., west of Mississippi River.	10.50 / 9.50
Sponge Iron, Domestic, 98 + % Fe: Deld. east of Mississippi River, 23,000 lb and over	10.50
Electrolytic Iron: Melting stock, 99.9% Fe, irregular fragments of ⅛ in. x 1.3 in.	28.00
Annealed, 99.5% Fe..	36.50
Unannealed (99 + % Fe)	36.00
Unannealed (99 + % Fe) (minus 325 mesh)	59.00
Powder Flakes (minus 16, plus 100 mesh).	29.00
Carbonyl Iron: 98.1-99.9%, 3 to 20 microns, depending on grade, 93.00-290.00 in standard 200-lb containers; all minus 200 mesh.	

Aluminum: Atomized, 500-lb drum, freight allowed	
Carlots	39.50
Ton lots	41.50
Antimony, 500-lb lots	42.00*
Brass, 5000-lb lots	30.30-45.70†
Bronze, 5000-lb lots	45.70-49.80†
Copper:	
Electrolytic	14.75*
Reduced	14.75*
Lead	7.50*
Manganese:	
Minus 35 mesh	64.00
Minus 100 mesh	70.00
Minus 200 mesh	75.00
Nickel, unannealed	74.00
Nickel-Silver, 5000-lb lots	47.80-52.60†
Phosphor-Copper, 5000-lb lots	57.80
Copper (atomized) 5000-lb lots	38.30-46.80†
Silicon	47.50
Solder	7.00*
Stainless Steel, 304	$1.07
Stainless Steel, 316	$1.26
Tin	14.50*
Zinc, 5000-lb lots	17.50-30.70†
Tungsten:	Dollars
Melting grade, 99%	
60 to 200 mesh, nominal;	
1000 lb and over	3.15
Less than 1000 lb	3.30
Chromium, electrolytic 99.8% Cr min metallic basis	5.00

*Plus cost of metal. †Depending on composition. ‡Depending on mesh.

Electrodes

Threaded with nipple; unboxed, f.o.b. plant

GRAPHITE

Inches Diam	Inches Length	Per 100 lb
2	24	$60.75
2½	30	39.25
3	40	37.00
4	40	35.00
5⅛	40	34.75
6	60	31.50
7	60	28.25
8, 9, 10	60	28.00
12	72	26.75
14	60	26.75
16	72	25.75
17	60	26.25
18	72	26.25
20	72	25.25
24	84	26.00

CARBON

8	60	13.30
10	60	13.00
12	60	12.95
14	60	12.85
14	72	11.95
17	60	11.85
17	72	11.40
20	84	11.40
20	90	11.00
24	72, 84	11.25
24	96	10.95
30	84	11.05
40, 35	110	10.70
40	100	10.70

Metallurgical Coke

Price per net ton

Beehive Ovens

Connellsville, Pa., furnace	$14.75-15.75
Connellsville, Pa., foundry	18.00-18.50

Oven Foundry Coke

Birmingham, ovens	$28.85
Cincinnati, deld.	31.84
Buffalo, ovens	30.50
Camden, N. J., ovens	29.50
Detroit, ovens	30.50
Pontiac, Mich., deld.	32.45
Saginaw, Mich., deld.	34.03
Erie, Pa., ovens	30.50
Everett, Mass., ovens:	
New England, deld.	31.55*
Indianapolis, ovens	29.75
Ironton, Ohio, ovens	29.00
Cincinnati, deld.	31.84
Kearny, N. J., ovens	29.75
Milwaukee, ovens	30.50
Neville Island (Pittsburgh), Pa., ovens	29.25
Painesville, Ohio, ovens	30.50
Cleveland, deld.	32.69
Philadelphia, ovens	29.50
St. Louis, ovens	31.50
St. Paul, ovens	29.75
Chicago, deld.	33.29
Swedeland, Pa., ovens	29.50
Terre Haute, Ind., ovens	29.75

*Or within $4.85 freight zone from works.

Coal Chemicals

Spot, cents per gallon, ovens

Pure benzene	36.00
Toluene, one deg	29.50
Industrial xylene	32.00-34.00

Per ton, bulk, ovens

Ammonium sulfate	$32.00-34.00

Cents per pound, producing point

Phenol: Grade 1, 17.50; Grade 2-3, 15.50; Grade 4, 17.50; Grade 5, 16.50; Grade 6, 14.50.

Imported Steel

(Base per 100 lb, landed, duty paid, based on current ocean rates. Any increase in these rates is for buyer's account. Source of shipment: Western continental European countries.)

	North Atlantic	South Atlantic	Gulf Coast	West Coast
Deformed Bars, Intermediate, ASTM-A 305	$5.53	$5.33	$5.33	$5.73
Bar Size Angles	5.73	5.58	5.58	5.99
Structural Angles	5.73	5.58	5.58	5.99
I-Beams	5.88	5.72	5.72	6.02
Channels	5.88	5.72	5.72	6.02
Plates (basic bessemer)	6.79	6.62	6.62	6.94
Sheets, H.R.	8.25	8.20	8.20	8.50
Sheets, C.R. (drawing quality)	9.00	8.95	8.95	9.25
Furring Channels, C.R., 1000 ft. ¾ x 0.30 lb per ft	25.71	25.59	25.59	26.46
Barbed Wire (†)	6.65	6.65	6.65	7.00
Merchant Bars	6.23	6.07	6.07	6.43
Hot-Rolled Bands	7.20	7.15	7.15	7.55
Wire Rods, Thomas Commercial No. 5	6.73	6.73	6.73	7.13
Wire Rods, O.H. Cold Heading Quality No. 5	7.07	7.07	7.07	7.47
Bright Common Wire Nails (§)	8.02	8.02	7.92	8.20

†Per 82 lb, net, reel. §Per 100-lb kegs, 20d nails and heavier.

Ferroalloys

MANGANESE ALLOYS

Spiegeleisen: Carlot, per gross ton, Palmerton, Neville Island, Pa., 21-23% Mn, $105; 19-21% Mn, 1-3% Si, $102.50; 16-19% Mn, $100.50.

Standard Ferromanganese: (Mn 74-76%, C 7% approx.) Base price per net ton: $245, Johnstown, Duquesne, Sheridan, Neville Island, Pa.; Alloy, W. Va.; Ashtabula, Marietta, O.; Sheffield, Ala.; Portland, Oreg. Add or subtract $2 for each 1% or fraction thereof of contained manganese over 76% or under 74%, respectively (Mn 79-81%). Lump $253 per net ton, f.o.b. Anaconda or Great Falls, Mont. Add $2.60 for each 1% above 81%; subtract $2.60 for each 1% below 79%, fractions in proportion to nearest 0.1%.

High-Grade Low-Carbon Ferromanganese: (Mn 85-90%). Carload, lump, bulk, max 0.07% C, 35.1c per lb of contained Mn, carload packed 36.4c, ton lots 37.9c, less ton 39.1c. Delivered. Deduct 1.5c for max 0.15% C grade from above prices, 3c for max 0.03% C, 3.5c for max 0.5% C, and 6.5c for max 75% C—max 7% Si. **Special Grade:** (Mn 90% min, C 0.07% max, P 0.06% max). Add 2.05c to the above prices. Spot, add 0.25c.

Medium-Carbon Ferromanganese: (Mn 80-85%, C 1.25-1.5%, Si 1.5% max). Carload, lump, bulk, 25.5c per lb of contained Mn, packed, carload 26.8c, ton lot 28.4c, less ton 29.6c. Delivered, Spot, add 0.25c.

Manganese Metal: 2" x D (Mn 95.5% min, Fe 2% max, Si 1% max, C 0.2%). Carload, lump, bulk, 45c per lb of metal; packed, 45.75c; ton lot 47.25c; less ton lot 49.25c. Delivered. Spot, add 2c.

Electrolytic Manganese Metal: Min carload, 34c; 2000 lb to min carload, 36c; less ton, 38c; 50 lb cans, add 0.5c per lb. Premium for hydrogen-removed metal, 0.75c per lb. Prices are f.o.b. cars, Knoxville, Tenn., freight allowed to St. Louis or any point east of Mississippi; or f.o.b. Marietta, O., freight allowed.

Silicomanganese: (Mn 65-68%). Carload, lump, bulk 1.50% C grade, 18-20% Si, 12.8c per lb of alloy. Packed, c.l. 14c, ton 14.45c, less ton 15.45c, f.o.b. Alloy, W. Va.; Ashtabula, Marietta, O.; Sheffield, Ala.; Portland, Oreg. For 2% C grade, Si 15-17%, deduct 0.2% from above prices. For 3% C grade Si 12-14.5%, deduct 0.4c from above prices. Spot, add 0.25c.

TITANINUM ALLOYS

Ferrotitanium, Low-Carbon: (Ti 20-25%, Al 3.5% max, Si 4% max, C 0.10% max). Contract, ton lot, 2" x D, $1.50 per lb of contained Ti; less ton $1.55. (Ti 38.43%, Al 8% max, Si 4% max, C 0.10% max). Ton lot $1.35, less ton $1.37, f.o.b. Niagara Falls, N. Y., freight allowed to St. Louis. Spot, add 5c.

Ferrotitanium, High-Carbon: (Ti 15-18%, C 6-8%). Contract $200 per ton, f.o.b. Niagara Falls, N. Y., freight allowed to destinations east of Mississippi River and north of Baltimore and St. Louis.

Ferrotitanium, Medium-Carbon: (Ti 17-21%, C 2-4.5%). Contract $225 per ton, f.o.b. Niagara Falls, N. Y., freight not exceeding St. Louis rate allowed.

CHROMIUM ALLOYS

High-Carbon Ferrochrome: Contract, c.l. lump, bulk 28.75c per lb of contained Cr; c.l. packed 30.30c, ton lot 32.05c; less ton 33.45c. Delivered. Spot, add 0.25c.

Low-Carbon Ferrochrome: Cr 63-66% (Simplex), carload, lump, bulk, C 0.025% max, 36.75c per lb contained Cr; 0.010% max, 37.75c. Ton lot, add 3.5c; less ton, add 5.2c. Delivered.

Cr 67-71%, carload, lump, bulk, C 0.02% max, 41.00c per lb contained Cr; 0.025% max, 39.75c; 0.05% max, 39.00c; 0.10% max, 38.50c; 0.20% max, 38.25c; 0.50% max, 38.00c; 1.0% max, 37.75c; 1.5% max, 37.50c; 2.0% max, 37.25c. Ton lot, add 3.4c; less ton lot, add 5.1c. Delivered.

Foundry Ferrochrome, High-Carbon: (Cr 61-66%, C 5-7%, Si 7-10%). Contract, c.l., 2 in. x D, bulk 30.05c per lb of contained Cr. Packed, c.l. 31.65c, ton 33.45c, less ton 34.95c. Delivered. Spot, add 0.25c.

Foundry Ferrosilicon Chrome: (Cr 50-54%, Si 28-32%, C 1.25% max). Contract, carload, packed, 8M x D, 21.25c, per lb of alloy, ton lot 22.50c; less ton lot 23.70c. Delivered. Spot add 0.25c.

Ferrochrome-Silicon: Cr 39-41%, Si 42-45%, C 0.05% max or Cr 33-36%, Si 45-48%, C 0.05% max. Carload, lump, bulk, 3" x down and 2" x down, 27.50c per lb contained Cr, 14.20c per lb contained Si. 0.75" x down, 28.65c per lb contained Cr, 14.20c per lb contained Si. Delivered.

Chromium Metal Electrolytic: Commercial grade (Cr 99.8% min, metallic basis, Fe 0.2% max). Contract, carlot, packed 2" x D plate (about ½" thick) $1.29 per lb, ton lot $1.31, less ton lot $1.33. Delivered. Spot, add 5c.

VANADIUM ALLOYS

Ferrovanadium: Open-hearth grade (V 50-55%, Si 8% max, C 3% max). Contract, any quantity, $3.20 per lb of contained V. Delivered. Spot, add 10c. **Special Grade:** (V 50-55% or 70-75%, Si 2% max, C 0.5% max) $3.30. **High Speed Grade:** (V 50-55%, or 70-75%, Si 1.50% max, C 0.20% max) $3.40.

Grainal: Vanadium Grainal No. 1 $1.05 per lb; No. 79, 50c, freight allowed.

Vanadium Oxide: Contract less carload lot, packed, $1.38 per lb contained V_2O_5, freight allowed. Spot, add 5c.

SILICON ALLOYS

25-30% Ferrosilicon: Contract, carload, lump, bulk, 20.0c per lb of contained Si. Packed 21.40c; ton lot 22.50c, f.o.b. Niagara Falls, N. Y., freight not exceeding St. Louis rate allowed.

50% Ferrosilicon: Contract, carload, lump, bulk, 14.20c per lb of contained Si. Packed c.l. 16.70c, ton lot 18.15c, less ton 19.80c, f.o.b. Alloy, W. Va.; Ashtabula, Marietta, O.; Sheffield, Ala.; Portland, Oreg. Spot, add 0.45c.

Low-Aluminum 50% Ferrosilicon: (Al 0.40% max). Add 1.45c to 50% ferrosilicon prices.

65% Ferrosilicon: Contract, carload, lump, bulk, 15.25c per lb contained silicon. Packed, c.l. 17.25c, ton lot 19.05c; less ton 20.4c. Delivered. Spot, add 0.35c.

75% Ferrosilicon: Contract, carload, lump, bulk, 16.4c per lb of contained Si. Packed, c.l. 18.30c, ton lot 19.95c, less ton 21.2c. Delivered. Spot, add 0.3c.

90% Ferrosilicon: Contract, carload, lump, bulk, 19.5c per lb of contained Si. Packed, c.l. 21.15c, ton lot 22.55c, less ton 23.6c. Delivered. Spot, add 0.25c.

Silicon Metal: (98% min Si, 0.75% max Fe, 0.07% max Ca). C.l. lump, bulk, 22.00c per lb of Si. Packed, c.l. 23.65c, ton lot 24.95c, less ton 25.95c. Add 0.5c for max 0.03% Ca grade. Deduct 0.5c, for max 1% Fe grade analyzing min 99.75% Si; 0.75c for max 1.25% Fe grades analyzing min 96.75% Si. Spot, add 0.25c.

Alsifer: (Approx 20% Al, 40% Si, 40% Fe). Contract, basis f.o.b. Niagara Falls, N. Y., lump, carload, bulk, 10.65c per lb of alloy; ton lot, packed, 11.8c.

ZIRCONIUM ALLOYS

12-15% Zirconium Alloy: (Zr 12-15%, Si 39-43%, C 0.20% max). Contract, c.l. lump, bulk 9.25c per lb of alloy. Packed, c.l. 10.45c, ton lot 11.6c, less ton 12.45c. Delivered. Spot, add 0.25c.

35-40% Zirconium Alloy: (Zr 35-40%, Si 47-52%, Fe 8-12%, C 0.50% max). Contract, carload, lump, packed 27.25c per lb of alloy, ton lot 28.4c, less ton 29.65c. Freight allowed. Spot, add 0.25c.

BORON ALLOYS

Ferroboron: (B 17.50% min, Si 1.50% max, Al 0.50% max, C 0.50% max). Contract, 100 lb or more 1" x D, $1.20 per lb of alloy; less than 100 lb $1.30. Delivered. Spot, add 5c. F.o.b. Washington, Pa., prices, 100 lb and over are as follows: Grade A (10-14% B) 85c per lb; Grade B (14-18% B) $1.20; Grade C (19% min B) $1.50.

Borosil: (3 to 4% B, 40 to 45% Si). Carload, bulk, lump, or 3" x D, $5.25 per lb of contained B. Packed, carload $5.40, ton to c.l. $5.50, less ton $5.60. Delivered.

Bortam: (B 1.5-1.9%). Ton lot, 45c per lb; less than ton lot, 50c per lb.

Carbortam: (B 1 to 2%). Contract, lump, carload 9.50c per lb f.o.b. Suspension Bridge, N. Y., freight allowed same as high-carbon ferrotitanium.

CALCIUM ALLOYS

Calcium-Manganese-Silicon: (Ca 16-20%, Mn 14-18% and Si 53-59%). Contract, carload, lump, bulk 23c per lb of alloy, carload packed 24.25c, ton lot 26.15c, less ton 27.15c. Delivered. Spot, add 0.25c.

Calcium-Silicon: (Ca 30-33%, Si 60-65%, Fe 1.5-3%). Contract, carload, lump, bulk 24c per lb of alloy, carload packed 25.65c, ton lot 27.95c, less ton 29.45c. Delivered. Spot, add 0.25c.

BRIQUETTED ALLOYS

Chromium Briquets: (Weighing approx 3¾ lb each and containing 2 lb of Cr). Contract, carload, bulk 19.60c per lb of briquet, carload packed in box pallets 19.80c, in bags 20.70c; 3000 lb to c.l. in box pallets 21.00c; 2000 lb to c.l. in bags 21.90c; less than 2000 lb in bags 22.80c. Delivered. Add 0.25c for notching. Spot, add 0.25c.

Ferromanganese Briquets: (Weighing approx 3 lb and containing 2 lb of Mn). Contract, carload, bulk 14.8c per lb of briquet; c.l., packed, pallets 15c, bags 16c; 3000 lb to c.l., pallets 16.2c; 2000 lb to c.l., bags, 17.2c; less ton 18.1c. Delivered. Add 0.25c for notching. Spot, add 0.25c.

Silicomanganese Briquets: (Weighing approx 3½ lb and containing 2 lb of Mn and approx ½ lb of Si). Contract, c.l. bulk 15.1c per lb of briquet; c.l. packed, pallets, 15.3c; bags 16.3c, 3000 lb to c.l., pallets, 16.5c; 2000 lb to c.l., bags 17.5c; less ton 18.4c. Delivered. Add 0.25c for notching. Spot, add 0.25c.

Silicon Briquets: (Large size—weighing approx 5 lb and containing 2 lb of Si). Contract, carload, bulk 7.7c per lb of briquet; packed, pallets, 7.9c; bags 8.9c; 3000 lb to c.l., pallets 9.5c; 2000 lb to c.l., bags 10.5c; less ton 11.4c. Delivered. Spot, add 0.25c. (Small size—weighing approx 2½ lb and containing 1 lb of Si). Carload, bulk 7.85c. Packed, pallets 8.05c; bags 9.05c; 3000 lb to c.l., pallets 9.65c; 2000 lb to c.l., bags, 10.65c; less ton 11.55c. Delivered. Add 0.25c for notching, small size only. Spot, add 0.25c.

Molybdic-Oxide Briquets: (Containing 2½ lb of Mo each). $1.41 per pound of Mo contained, f.o.b. Langeloth, Pa.

TUNGSTEN ALLOYS

Ferrotungsten: (70-80%). 5000 lb W or more $2.15 per lb (nominal) of contained W. Delivered.

OTHER FERROALLOYS

Ferrocolumbium: (Cb 50-60%, Si 8% max, C 0.4% max). Ton lots 2" x D, $4 per lb of contained Cb; less ton lots, $4.05 (nominal). Delivered.

Ferrotantalum Columbium: (Cb 40% approx Ta 20% approx, and Cb plus Ta 60% min, C 0.30% max). Ton lot 2" x D, $3.80 per lb of contained Cb plus Ta, delivered; less ton lot $3.85 (nominal).

SMZ Alloy: (Si 60-65%, Mn 5-7%, Zr 5-7%, Fe 20% approx). Contract, c.l. packed ½-in. x 12 M 20.00c per lb of alloy, ton lot 21.15c, less ton 22.40c. Delivered. Spot, add 0.25c.

Graphidox No. 5: (Si 48-52%, Ca 5-7%, Ti 9-11%). C.l. packed, 19c per lb of alloy, ton lot 20.15c; less ton lot 21.4c, f.o.b. Niagara Falls, N. Y.; freight allowed to St. Louis.

V-5 Foundry Alloy: (Cr 38-42%, Si 17-19%, Mn 8-11%). C.l. packed 18.1c per lb of alloy; ton lot 19.55c; less ton lot 20.8c, f.o.b. Niagara Falls, N. Y.; freight allowed to St. Louis.

Simanal: (Approx 20% each Si, Mn, Al; bal Fe). Lump, carload, bulk 18.50c. Packed c.l. 19.50c, 2000 lb to c.l. 20.50c, less than 2000 lb 21c per lb of alloy. Delivered.

Ferrophosphorus: (23-25% based on 24% P content with unitage of $4 for each 1% of P above or below the base); carload, f.o.b. sellers' works, Mt. Pleasant, Siglo, Tenn., $110 per gross ton.

Ferromolybdenum: (55-75%). Per lb of contained Mo, in 200-lb container, f.o.b. Langeloth and Washington, Pa. $1.68 in all sizes except powdered which is $1.74.

Technical Molybdic-Oxide: Per lb of contained Mo, in cans, $1.39; in bags, $1.38, f.o.b. Langeloth and Washington, Pa.

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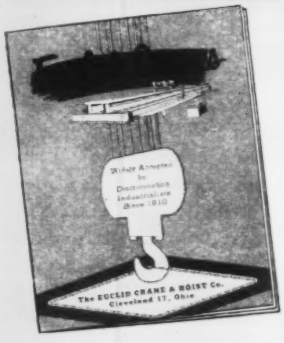

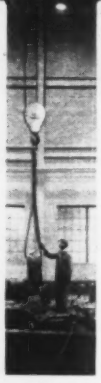

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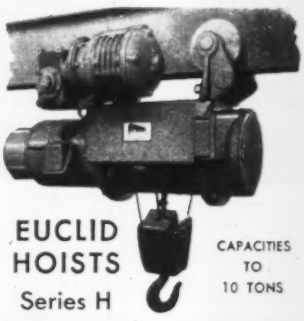

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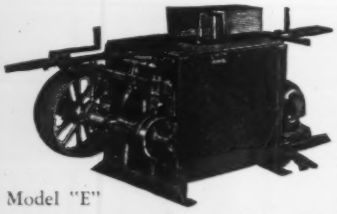

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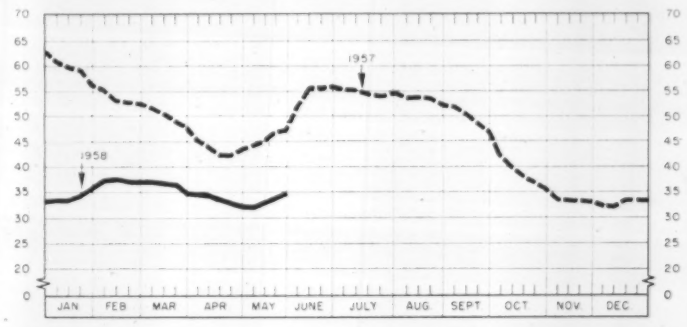
ESTABLISHED 1936

STEELMAKING SCRAP PRICE COMPOSITE

Based on No. 1 heavy melting grade at Pittsburgh Chicago, and eastern Pennsylvania—Compiled by STEEL.



May 28 1958	Week Ago	Month Ago	Year Ago	April Avg.
$34.50	$33.50	$31.83	$47.00	$33.08

Scrap Rise Gains Momentum

STEEL's composite on the prime steelmaking grade advances another $1 to $34.50. It reflects improved outlook attending recovery in steel ingot rate to 56.5 per cent

Scrap Prices, Page 126

Chicago — The upswing in the scrap market continues, and the movement is not likely to be arrested so long as the district steelmaking rate improves. During the last six weeks, the rate has risen from the year's low of 52.5 per cent of capacity to 63 per cent.

Reflecting the possibility that steelmaking may have turned the corner, dealers are disposed to sit tight and guard their supplies for better prices. Advances last week averaged $1 to $2 a ton, applying on all grades.

Pittsburgh — Higher prices in Youngstown are giving the market a firmer tone. Despite slow trade, local consumers are paying $33-$35 for No. 1 heavy melting.

A major mill indicates it has enough scrap on hand to support 100 per cent operations for three months.

Philadelphia—Prices on the steelmaking grades of scrap are steady with shipments light. While the mills are taking shipments against orders, new buying is near a standstill. Foundries, operating at a low rate, are not showing any interest in the cast iron grades.

The Pennsylvania Railroad list for June includes 19,120 tons, of which 5000 tons are No. 1 railroad heavy melting and 1400 tons rerolling rails.

Only one export cargo is scheduled for loading at this port so far for June.

Cleveland—Pending the outcome of bids on current automotive lists, the scrap market here is unchanged with No. 1 heavy melting quoted $32.50-$33.50 based on sales in the Valley a week ago at $37. The tone of the market is stronger despite the absence of active mill buying. Reason: Rising steelmaking operations. Last week, the Cleveland district ingot rate rose 1.5 points to 33.5 per cent of capacity.

Buffalo—With steel production rising, the local scrap trade anticipates a $1 to $2 a ton boost on the mill grades when June orders are placed. But the mills are holding comfortable inventories and are in position to resist a sharp increase.

Cincinnati—Higher scrap prices are expected here this month with the new industrial lists showing strength. District mills are expected to enter the market this week.

St. Louis—Scrap prices are rising here in a stronger market. Improved demand for all dealer grades is noted, but dealers are not anxious to dispose of tonnages in the face of a rising market. Brokers are buying when they can.

Railroad scrap is up $1 to $6 a ton, random length rails being quoted $1 higher, and rerolling rails $6.

Birmingham—A shortage of 3-ft electric furnace steel has developed here. Brokers are having difficulty filling orders for this grade. The movement of other grades of scrap is slow, with only a negligible tonnage coming into yards. Dealers are not anxious to dispose of tonnage with a stronger market developing. Some items, particularly industrial and railroad scrap, went up $1 a ton last week. The cast iron grades held steady.

Houston—June demand for heavy melting grades of scrap in this district will be almost nil with the leading mill limiting its purchases to turnings. It will continue to take in on a contract basis a new grade of scrap called "Prolerized" steel (see STEEL, May 19, p. 91).

Detroit—About 164 carloads of No. 1 scrap were offered in auto lists last week. That's about a 30 per cent drop from the 247 cars offered last month. The small amount of scrap, coupled with Chrysler's shutdown of three local plants, has tended to boost list prices close to $36 on the high side. Some splits were going at $31-$32.

The relatively high prices are expected to result in a boost in dealers' prices. One dealer reports picking up No. 1 items for conversion to bundles at $22.50. Another says foundry steel is going for around $18.

Seattle—The scrap market here is unchanged. Sales are slow, yards are idle, receipts are low, and buyers, including foreign interests, are uninterested in offerings. Mill inventories are substantial.

Los Angeles—Despite shrinking consumer inventories, scrap sales continue slow, and indications are that recent price increases will not hold.

STRUCTURAL SHAPES . . .

STRUCTURAL STEEL PLACED

1200 tons, Tukey's Bridge, Portland, Maine, to the Bancroft & Martin Rolling Mills Co., South Portland, Maine; W. H. Hinman Inc., North Anson, Maine, general contractor; 520 tons, steel H-piles, to the Bethlehem Steel Co., Bethlehem, Pa.

975 tons, six state bridges, Wilmington, Mass., to the Bethlehem Steel Co., Bethlehem, Pa.;

(*Please turn to Page* 131)

Iron and Steel Scrap

Consumer prices per gross ton, except as otherwise noted, including brokers' commission, as reported to STEEL, May 28, 1958. *Changes shown in italics.*

STEELMAKING SCRAP COMPOSITE

May 28	$34.50
May 21	33.50
Apr. Avg.	33.08
May 1957	45.75
May 1953	39.17

Based on No. 1 heavy melting grade at Pittsburgh, Chicago, and eastern Pennsylvania.

PITTSBURGH

No. 1 heavy melting	*34.00-35.00*
No. 2 heavy melting	*30.00-31.00*
No. 1 dealer bundles	*34.00-35.00*
No. 2 bundles	*26.00-27.00*
No. 1 busheling	*34.00-35.00*
No. 1 factory bundles	*38.00-39.00*
Machine shop turnings	13.00-14.00
Mixed borings, turnings	13.00-14.00
Short shovel turnings	17.00-18.00
Cast iron borings	17.00-18.00
Cut structurals:	
2 ft and under	37.00-38.00
3 ft lengths	35.00-36.00
Heavy turnings	*30.00-31.00*
Punchings & plate scrap	*38.00-39.00*
Electric furnace bundles	37.00-38.00

Cast Iron Grades

No. 1 cupola	40.00-41.00
Stove plate	40.00-41.00
Unstripped motor blocks	23.00-24.00
Clean auto cast	40.00-41.00
Drop broken machinery	48.00-49.00

Railroad Scrap

No. 1 R.R. heavy melt.	36.00-37.00
Rails, 2 ft and under	53.00-54.00
Rails, 18 in. and under	54.00-55.00
Random rails	50.00-51.00
Railroad specialties	43.00-44.00
Angles, splice bars	47.00-48.00
Rails, rerolling	55.00-56.00

Stainless Steel Scrap

18-8 bundles & solids	170.00-175.00
18-8 turnings	95.00-100.00
430 bundles & solids	95.00-100.00
430 turnings	50.00-52.00

CHICAGO

No. 1 hvy melt., indus.	*35.00-36.00*
No. 1 hvy melt., dealer	*33.00-34.00*
No. 2 heavy melting	*31.00-32.00*
No. 1 factory bundles	*39.00-40.00*
No. 1 dealer bundles	*34.00-35.00*
No. 2 bundles	*26.00-27.00*
No. 1 busheling, indus.	*35.00-36.00*
No. 1 busheling, dealer	*33.00-34.00*
Machine shop turnings	*18.00-19.00*
Mixed borings, turnings	*20.00-21.00*
Short shovel turnings	*20.00-21.00*
Cast iron borings	*20.00-21.00*
Cut structurals, 3 ft	*41.00-42.00*
Punchings & plate scrap	*42.00-43.00*

Cast Iron Grades

No. 1 cupola	*41.00-42.00*
Stove plate	*37.00-38.00*
Unstripped motor blocks	*33.00-34.00*
Clean auto cast	*46.00-47.00*
Drop broken machinery	*46.00-47.00*

Railroad Scrap

No. 1 R.R. heavy melt.	*38.00-39.00*
R.R. malleable	*50.00-51.00*
Rails, 2 ft and under	*51.00-52.00*
Rails, 18 in. and under	*52.00-53.00*
Angles, splice bars	*46.00-47.00*
Axles	*55.00-56.00*
Rails, rerolling	*53.00-54.00*

Stainless Steel Scrap

18-8 bundles & solids	*165.00-170.00*
18-8 turnings	*90.00-95.00*
430 bundles & solids	90.00-95.00
430 turnings	*50.00-55.00*

YOUNGSTOWN

No. 1 heavy melting	36.00-37.00
No. 2 heavy melting	22.00-23.00
No. 1 busheling	36.00-37.00
No. 1 bundles	36.00-37.00
No. 2 bundles	21.00-22.00
Machine shop turnings	9.00-10.00
Short shovel turnings	13.00-14.00
Cast iron borings	13.00-14.00
Low phos.	34.00-35.00
Electric furnace bundles	37.00-38.00

Railroad Scrap

No. 1 R.R. heavy melt.	35.00-36.00

CLEVELAND

No. 1 heavy melting	32.50-33.50
No. 2 heavy melting	19.00-20.00
No. 1 factory bundles	31.00-32.00
No. 1 bundles	32.50-33.50
No. 2 bundles	20.00-21.00
No. 1 busheling	32.50-33.50
Machine shop turnings	7.00-8.00
Short shovel turnings	11.00-12.00
Mixed borings, turnings	11.00-12.00
Cast iron borings	11.00-12.00
Cut foundry steel	34.00-35.00
Cut structurals, plates 2 ft and under	36.00-37.00
Low phos, punchings & plate	30.00-31.00
Alloy free, short shovel turnings	16.00-17.00
Electric furnace bundles	33.50-34.50

Cast Iron Grades

No. 1 cupola	42.00-43.00
Charging box cast	33.00-34.00
Heavy breakable cast	33.00-34.00
Stove plate	43.00-44.00
Unstripped motor blocks	25.00-26.00
Brake shoes	33.00-34.00
Clean auto cast	42.00-43.00
Burnt cast	30.00-31.00
Drop broken machinery	47.00-48.00

Railroad Scrap

R.R. malleable	60.00-61.00
Rails, 2 ft and under	56.00-57.00
Rails, 18 in. and under	57.00-58.00
Rails, random lengths	49.00-50.00
Cast steel	44.00-45.00
Railroad specialties	47.00-48.00
Uncut tires	40.00-41.00
Angles, splice bars	46.00-47.00
Rails, rerolling	51.00-52.00

Stainless Steel

(Brokers' buying prices; f.o.b. shipping point)

18-8 bundles, solids	160.00-165.00
18-8 turnings	90.00-95.00
430 clips, bundles, solids	75.00-80.00
430 turnings	40.00-50.00

ST. LOUIS

(Brokers' buying prices)

No. 1 heavy melting	32.00
No. 2 heavy melting	30.00
No. 1 bundles	32.00
No. 2 bundles	23.00
No. 1 busheling	32.00
Machine shop turnings	16.00
Short shovel turnings	18.00

Cast Iron Grades

No. 1 cupola	40.00
Charging box cast	33.00
Heavy breakable cast	33.00
Unstripped motor blocks	34.00
Clean auto cast	44.00
Stove plate	37.00

Railroad Scrap

No. 1 R.R. heavy melt.	*38.00*
Rails, 18 in. and under	48.00
Rails, random lengths	*45.00*
Rails, rerolling	*53.00*
Angles, splice bars	45.00

BIRMINGHAM

No. 1 heavy melting	30.00-31.00
No. 2 heavy melting	25.00-26.00
No. 1 bundles	30.00-31.00
No. 2 bundles	*19.00-20.00*
No. 1 busheling	30.00-31.00
Cast iron borings	12.00-13.00
Machine shop turnings	*20.00-21.00*
Short shovel turnings	*21.00-22.00*
Bar crops and plates	*37.00-38.00*
Structurals & plates	*36.00-37.00*
Electric furnace bundles	34.00-35.00
Electric furnace:	
2 ft and under	33.00-34.00
3 ft and under	32.00-33.00

Cast Iron Grades

No. 1 cupola	48.00-49.00
Stove plate	48.00-49.00
Unstripped motor blocks	38.00-39.00
Charging box cast	22.00-23.00
No. 1 wheels	34.00-35.00

Railroad Scrap

No. 1 R.R. heavy melt.	*32.00-34.00*
Rails, 18 in. and under	*47.00-48.00*
Rails, rerolling	*46.00-47.00*
Rails, random lengths	*43.00-44.00*
Angles, splice bars	*39.00-40.00*

PHILADELPHIA

No. 1 heavy melting	34.00-35.00
No. 2 heavy melting	31.00
No. 1 bundles	34.00-35.00
No. 2 bundles	24.00
No. 1 busheling	34.00-35.00
Electric furnace bundles	36.00
Mixed borings, turnings	16.00†
Short shovel turnings	18.00
Machine shop turnings	15.00
Heavy turnings	29.00
Structural & plate	39.00-40.00
Couplers, springs, wheels	43.50
Rail crops, 2 ft & under	56.00-58.00

Cast Iron Grades

No. 1 cupola	38.00
Heavy breakable cast	40.00
Malleable	58.00-59.00
Drop broken machinery	47.00-48.00

NEW YORK

(Brokers' buying prices)

No. 1 heavy melting	29.00-30.00
No. 2 heavy melting	25.00-26.00
No. 1 bundles	29.00-30.00
No. 2 bundles	16.00-17.00
Machine shop turnings	8.00-9.00†
Mixed borings, turnings	9.00-10.00†
Short shovel turnings	11.00-12.00†
Low phos (structurals & plates)	32.00-33.00

Cast Iron Grades

No. 1 cupola	35.00-36.00
Unstripped motor blocks	24.00-25.00
Heavy breakable	33.00-34.00

Stainless Steel

18-8 sheets, clips, solids	135.00-140.00
18-8 borings, turnings	45.00-50.00
410 sheets, clips, solids	50.00-55.00
430 sheets, clips, solids	60.00-65.00

BUFFALO

No. 1 heavy melting	26.00-27.00
No. 2 heavy melting	22.00-23.00
No. 1 bundles	26.00-27.00
No. 2 bundles	20.00-21.00
No. 1 busheling	26.00-27.00
Mixed borings, turnings	13.00-14.00
Machine shop turnings	10.00-11.00
Short shovel turnings	14.00-15.00
Cast iron borings	13.00-14.00
Low phos. structurals and plate, 5 ft and under	31.00-32.00
2 ft and under	35.00-36.00

Cast Iron Grades

(F.o.b. shipping point)

No. 1 cupola	39.00-40.00
No. 1 machinery	43.00-44.00

Railroad Scrap

Rails, random lengths	45.00-46.00
Rails, 3 ft and under	51.00-52.00
Railroad specialties	35.00-36.00

CINCINNATI

(Buyers' buying prices; f.o.b. shipping point)

No. 1 heavy melting	*31.00-32.00*
No. 2 heavy melting	*26.00-27.00*
No. 1 bundles	*31.00-32.00*
No. 2 bundles	19.50-20.50
No. 1 busheling	*31.00-32.00*
Machine shop turnings	9.00-10.00
Mixed borings, turnings	9.00-10.00
Short shovel turnings	11.00-12.00
Cast iron borings	9.00-10.00
Low phos. 18 in.	36.00-37.00

Cast Iron Grades

No. 1 cupola	38.00-39.00
Heavy breakable cast	32.00-33.00
Charging box cast	32.00-33.00
Drop broken machinery	45.00-46.00

Railroad Scrap

No. 1 R.R. heavy melt.	34.00-35.00
Rails, 18 in. and under	52.00-53.00
Rails, random lengths	43.00-44.00

HOUSTON

(Brokers' buying prices; f.o.b. cars)

No. 1 heavy melting	29.00†
No. 2 heavy melting	27.00†
No. 2 bundles	19.00†
Machine shop turnings	12.00
Crushed turnings	16.00
Low phos. plates, structurals	35.00†

Cast Iron Grades

No. 1 cupola	34.50
Heavy breakable	30.00†
Unstripped motor blocks	33.50

Railroad Scrap

No. 1 R.R. heavy melt.	31.00†

BOSTON

(Brokers' buying prices; f.o.b. shipping point)

No. 1 heavy melting	23.00-24.00
No. 2 heavy melting	18.00-19.00
No. 1 bundles	22.00-23.00
No. 2 bundles	14.00-15.00
No. 1 busheling	23.00-24.00
Machine shop turnings	4.00-5.00†
Mixed borings, turnings	4.00-5.000†
Short shovel turnings	6.00-7.00†
No. 1 cast	28.00-29.00
Mixed cupola cast	27.00-28.00
No. 1 machinery cast	31.00-32.00

DETROIT

(Brokers' buying prices; f.o.b. shipping point)

No. 1 heavy melting	24.00-25.00
No. 2 heavy melting	18.00-19.00
No. 1 bundles	*26.00-27.00*
No. 2 bundles	*16.00-17.00*
No. 1 busheling	24.00-25.00
Machine shop turnings	*6.00-7.00*
Mixed borings, turnings	*7.00-8.00*
Short shovel turnings	*8.00-9.00*
Punchings & plate	*28.00-29.00*

Cast Iron Grades

No. 1 cupola	*34.00-35.00*
Stove plate	*27.00-28.00*
Charging box cast	*26.00-27.00*
Heavy breakable	*24.00-25.00*
Unstripped motor blocks	15.00-16.00
Clean auto cast	33.00-34.00

SEATTLE

No. 1 heavy melting	27.00†
No. 2 heavy melting	25.00†
No. 1 bundles	21.00†
No. 2 bundles	20.00†
Machine shop turnings	16.00
Mixed borings, turnings	16.00
Electric furnace No. 1	38.00

Cast Iron Grades

No. 1 cupola	31.00
Heavy breakable cast	28.00
Unstripped motor blocks	23.00
Stove plate (f.o.b. plant)	21.00

LOS ANGELES

No. 1 heavy melting	34.00
No. 2 heavy melting	32.00
No. 1 bundles	30.00
No. 2 bundles	22.00
Machine shop turnings	9.00
Shoveling turnings	11.00
Cast iron borings	11.00
Cut structurals and plate 1 ft and under	45.00

Cast Iron Grades

(F.o.b. shipping point)

No. 1 cupola	41.00

Railroad Scrap

No. 1 R.R. heavy melt.	34.00

SAN FRANCISCO

No. 1 heavy melting	32.00
No. 2 heavy melting	30.00
No. 1 bundles	30.00
No. 2 bundles	22.00
Machine shop turnings	15.00
Mixed borings, turnings	15.00
Cast iron borings	15.00
Heavy turnings	15.00
Short shovel turnings	15.00
Cut structurals, 3 ft	40.00

Cast Iron Grades

No. 1 cupola	42.00
Charging box cast	34.00
Stove plate	34.00
Heavy breakable cast	28.00
Unstripped motor blocks	31.00
Clean auto cast	40.00
Drop broken machinery	40.00
No. 1 wheels	34.00

HAMILTON, ONT.

No. 1 heavy melting	30.00
No. 2 heavy melting	26.00
No. 1 bundles	30.00
No. 2 bundles	23.00
Mixed steel scrap	25.00
Mixed borings, turnings	15.00
Busheling, new factory:	
Prepared	30.00
Unprepared	24.00
Short steel turnings	19.00

Cast Iron Grades‡

No. 1 machinery cast	45.00-50.00

†Nominal.
‡F.o.b. Hamilton, Ont.

Does a specialized business publication advertising help salesmen?

No one is in a better position to give a hard-boiled, practical answer to this question than the men who spend their working lives on the sales front... the men the ads are supposed to help... the men who sell.

Here is the statement of a salesman who knows what advertising does for him when it appears in the industrial, trade or professional publications that serve the specialized markets to which he sells:

W. A. Beach
Black & Decker Mfg. Co.
sells to wholesalers and retailers

says Mr. Beach:

"We have to sell our product first to the wholesaler; then help him sell to the retailer. We do a lot of missionary work. We make calls with the wholesaler salesmen and we run dealer and clerk training clinics in which we try to help the dealers improve their merchandising.

"Our trade advertising in publications read by the wholesaler and dealer, works with us along those same lines. In other words, it's like having an additional sales representative in each territory constantly calling on the dealers and wholesalers. Every time they open their trade books he tells them about our products and the special promotions we run to help them sell more. He works nights too, and calls on them at home when they're doing their reference work and planning. I know they do take their magazines home at night and read them. So, in effect, this 'salesman' works at night for us, and I do believe he finds them in a more receptive mood at that time.

"The greatest evidence that our advertising is out there doing a job and really paying off is in connection with the two large-scale promotions we do each year.

"For instance, right now we're working on our current Christmas promotion called 'The Bell-Ringer'. That was announced in September. Between the announcement and the Christmas selling season we must sell the wholesaler and then set up a schedule with each wholesaler to go out with his men and call on the trade and actually sell the deal to the retailer. You can imagine how tight our schedule is. In this short span of time we have to call on practically every hardware dealer in the territory. It adds up to a terrific number of calls and in order to get around, we just can't afford to give each dealer all the time we'd like to. In addition, it's extremely difficult to explain all the details on something like this Christmas promotion in the short time allotted each dealer.

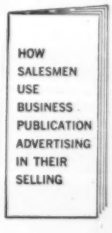
"We couldn't do it if the advertising wasn't in there doing part of the work for us. Believe me, it's wonderful to find that when you do call on a wholesaler or dealer you don't have to take the time to explain all the details, because he has already read about it in the hardware publications. In most cases he's ready to see the merchandise. We have the opportunity to close the sale in short order. Right now I'm engaged in making dealer calls with wholesalers' salesmen and I'd say that nine cases out of ten the dealers have already seen our ads on the Christmas promotion and are somewhat pre-sold on the deal. In fact, in most cases I've found that all I have to do is show him the merchandise."

Ask your own salesmen

what your company's business publication advertising does for them. If their answers are generally favorable, you can be sure that it is really helping them sell. If too many answers are negative, it could well pay you to review your advertising objectives—and to make sure the publications that carry your advertising are read by the men who must be sold.

How salesmen use their companies' advertising to get more business

Here's a useful package of ideas for the sales manager, advertising manager or agency man who would like to get more horsepower out of his advertising. Send for a free copy of the pocket size booklet which reports the successful methods employed by eleven salesmen who tell how they get more value out of their companies' business publication advertising.



You can be sure that more of your salesmen will use your advertising after they read how others get business through these simple methods.

The coupon is for your convenience in sending for your free copy.

NATIONAL BUSINESS PUBLICATIONS, INC.

NBP

...each of which serves a specialized market in a specific industry, trade or profession.

NATIONAL BUSINESS PUBLICATIONS, INC.
Department 11E
1413 K Street, N. W.
Washington 5, D. C. **STerling 3-7533**

Please send me a free copy of the NBP booklet "How Salesmen Use Business Publication Advertising in Their Selling."

Name

Title

Company

Street Address

City Zone State

Mineral Bill in Congress

Revised program would set limits on subsidy payments and give administration indirect control over domestic output. Hearings scheduled to start on June 4

Nonferrous Metal Prices, Pages 130 & 131

LEGISLATIVE recommendations to aid five minerals have been forwarded to Congress by Interior Secretary Fred A. Seaton. Contents: They spell out the details of the administration's five year, multi-million dollar stabilization program outlined to Congress on Apr. 28 (see STEEL, May 5, p. 55).

Highlights—The revised recommendations propose: A floor price on payments, quarterly limitations on subsidies, suspension of payments in case of overproduction, special provisions for tungsten.

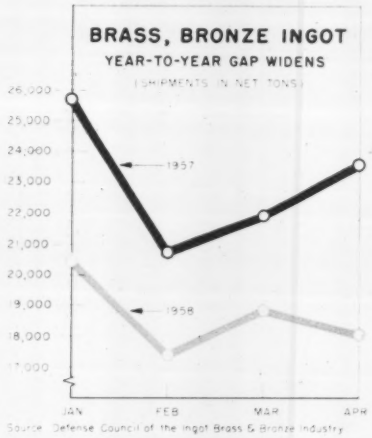
Previously, the government suggested these stabilized prices: 27.5 cents a pound for copper, 14.75 cents for lead, 12.75 cents for zinc, $48 a ton for fluorspar (acid grade), and $36 a ton unit for tungsten trioxide. Under the revised plan, Uncle Sam will pay the producer the difference between the stabilized price and the selling price as long as it doesn't exceed 3.5 cents a pound for copper, 3.375 cents for lead, 2.5 cents for zinc, $8 a ton for fluorspar, and $18 a ton unit for tungsten.

Example: The stabilized price for copper is 27.5 cents a pound, the subsidy maximum 3.5 cents. To get the full benefits of the stabilized price, copper couldn't go below 24 cents a pound. If it did, payments still wouldn't exceed 3.5 cents.

Eligibility — Payment would be based on the recoverable content of ores and concentrates sold by domestic producers. They would also be allowed on "bona fide transfers of newly mined ores and concentrates for further processing within integrated organizations." Excluded: 1. Material sold to or eligible for sale to the government. 2. Material in the hands of producers before the bill becomes effective.

Subsidy payments would be limited to yearly sales of: 1 million tons of copper, 350,000 tons of lead, 550,000 tons of zinc, 180,000 tons of fluorspar, 375,000 ton units of tungsten trioxide. But the administration asks authority to fix quarterly limitations on the quantities of each material it will subsidize "to stabilize production rates."

Controls—The administration also requests authority to shut off payments completely if domestic output exceeds quarterly limitations (by predetermined amounts) for two successive quarters. Producers, theoretically, would not be able to collect again until their output was reduced enough to satisfy the government.



Source: Defense Council of the Ingot Brass & Bronze Industry

Payments to tungsten producers would be limited to "15,000 ton units per quarter from production originating in any one mining district."

Tussle—The Senate Interior Committee opens hearings on the bill June 4. Expect plenty of fireworks—neither Congress nor the mining industry is too impressed with this proposal.

The chief industry objection is that the bill would tend to depress prices and stimulate production. Some are afraid that facilities closed down to bring supply and demand back into balance might be reopened since the maximum tonnages allowable for payment embrace virtually the total U. S. production of these metals (although Secretary Seaton denies this). There would undoubtedly be customer pressure for producers to lower prices, say metalmen. Many are simply opposed to subsidies in general.

The bill will find rough sledding in the Senate—even rougher if it gets into the House. Objections are many. Example: "An escalator clause should have been built into quotas to allow for increased consumption in the future," says one Congressional source.

Custom Copper Up Again

A continued good demand for custom smelted copper encouraged producers to raise their price 0.25 cent to 24.25 cents a pound on May 27 following a similar boost on May 22. It's felt the improved business in custom smelted is at the expense of primary producers rather than a reflection of an upturn in overall sales.

NONFERROUS PRICE RECORD

	Price May 27	Last Change	Previous Price	Apr. Avg	Mar. Avg	May, 1957 Avg
Aluminum	24.00	Apr. 1, 1958	26.00	24.000	26.000	25.000
Copper	24.25–25.00	May 27, 1958	24.00–25.00	24.323	24.163	31.087
Lead	11.30	May 14, 1958	11.80	11.800	12.800	15.185
Magnesium	35.25	Aug. 13, 1956	33.75	35.250	35.250	35.250
Nickel	74.00	Dec. 6, 1956	64.50	74.000	74.000	74.000
Tin	94.50	May 22, 1958	94.375	93.021	93.425	98.341
Zinc	10.00	July 1, 1957	10.50	10.000	10.000	13.500

Quotations in cents per pound based on: COPPER, mean of primary and secondary, deld. Conn. Valley; LEAD, common grade, deld. St. Louis; ZINC, prime western, E. St. Louis; TIN, Straits, deld. New York; NICKEL, electrolytic cathodes, 99.9%, base size at refinery, unpacked; ALUMINUM, primary pig, 99.5+%, f.o.b. shipping point; MAGNESIUM, pig, 99.8%, Velasco, Tex.

When the pressure's on...

Bridgeport DURONZE* is the choice

*Aluminum Silicon Bronze

Superior wear resistance and good machinability make Bridgeport Duronze 707 (Aluminum Silicon Bronze) an ideal material for many products.

Take, for example, its use by Chicago Pneumatic Tool Co., New York, N. Y., in the oil pump gears used in their rotary portable and stationary Class "P" compressors.

These gears pump the lubricating oil which seals rotary compressor vane clearances, lubricates vital parts and also cools the air during compression. In meeting the precise requirements of this job, Duronze's combination of high strength, wear resistance and machinability are equally important advantages.

In the annealed condition, in which it is generally supplied, Duronze has an average tensile strength of 90,000 lbs. per square inch. Its endurance limit is over twice that of Naval Brass and it is generally superior in corrosion and wear resistance.

Duronze is only one of Bridgeport's complete line of copper and brass alloys in sheet, rod, wire and tube, designed to help you meet a wide variety of product and production applications better, faster and more economically. To help you in choosing the right alloy for your specific needs, you can expect and get experienced assistance from your Bridgeport Salesman and from the Technical Staff behind him. For prompt service, give your local Bridgeport Sales Office a call today.

matched Bridgeport Brass Alloys to your job

BRIDGEPORT BRASS

Offices in Principal Cities • Conveniently Located Warehouses

Bridgeport Brass Company, Bridgeport 2, Connecticut

In Canada: Noranda Copper and Brass Limited, Montreal

Nonferrous Metals

Cents per pound, carlots except as otherwise noted.

PRIMARY METALS AND ALLOYS

Aluminum: 99.5%, pigs, 24.00; ingots, 26.10, 30,000 lb or more, f.o.b. shipping point. Freight allowed on 500 lb or more.

Aluminum Alloy: No. 13, 27.90; No. 43, 27.70; No. 195, 28.70; No. 214, 29.50; No. 356, 27.90, 30-lb ingots.

Antimony: R.M.M. brand, 99.5%, 29.00; Lone Star brand, 29.50, f.o.b. Laredo, Tex., in bulk. Foreign brands, 99.5%, 23.50-24.50, New York, duty paid, 10,000 lb or more.

Beryllium: 97% lump or beads, $71.50 per lb, f.o.b. Cleveland or Reading, Pa.

Beryllium Aluminum: 5% Be, $74.75 per lb of contained Be, with balance as Al at market price, f.o.b. shipping point.

Beryllium Copper: 3.75-4.25% Be, $43 per lb of contained Be, with balance as Cu at market price on shipment date, f.o.b. shipping point.

Bismuth: $2.25 per ton, ton lots.

Cadmium: Sticks and bars, $1.55 per lb deld.

Cobalt: 97-99%, $2.00 per lb for 550-lb keg; $2.02 per lb for 100 lb case; $2.07 per lb under 100 lb.

Columbium: Powder, $55-90 per lb, nom.

Copper: Electrolytic, 25.00 deld.; custom smelters, 24.25; lake, 25.00 deld.; fire refined, 24.75 deld.

Germanium: First reduction, $179.17-197.31 per lb; intrinsic grade, $197.31-220 per lb, depending on quantity.

Gold: U. S. Treasury, $35 per oz.

Indium: 99.9%, $2.25 per troy oz.

Iridium: $70-80 nom. per troy oz.

Lead: Common, 11.30; chemical, 11.40; corroding, 11.40, St. Louis. New York basis, add 0.20.

Lithium: 98 + %, 50-100 lb, cups or ingots, $12; rod, $15; shot or wire, $16. 100-500 lb, cups or ingots, $10.50; rod, $14; shot or wire $15, f.o.b. Minneapolis.

Magnesium: Pig, 35.25; ingot, 36.00 f.o.b. Velasco, Tex.; 12 in. thick, 59.00 f.o.b. Madison, Ill.

Magnesium Alloys: AZ91A (diecasting), 40.75 deld.; AZ63A, AZ92A, AZ91C (sand casting), 40.75, f.o.b. Velasco, Tex.

Mercury: Open market, spot, New York, $228-230 per 76-lb flask.

Molybdenum: Unalloyed, turned extrusions, 3.75-5.75 in. round, $9.60 per lb in lots of 2500 lb or more, f.o.b. Detroit.

Nickel: Electrolytic cathodes, sheets (4 x 4 in. and larger), unpacked, 74.00; 10-lb pigs, unpacked, 78.25; "XX" nickel shot, 79.50; "F" nickel shot for addition to cast iron, 74.50; "F" nickel, 5 lb ingots in kegs for addition to cast iron, 75.50. Prices f.o.b. Port Colborne, Ont., including import duty, New York basis, add 1.01. Nickel oxide sinter, 71.25 per lb of nickel content before 1 cent freight allowance, f.o.b. Copper Cliff, Ont.

Osmium: $70-100 per troy oz nom.

Palladium: $19-21 per troy oz.

Platinum: $64-70 per troy oz from refineries.

Radium: $16-21.50 per mg radium content, depending on quantity.

Rhodium: $118-125 per troy oz.

Ruthenium: $45-55 per troy oz.

Selenium: $7.00 per lb, commercial grade.

Silver: Open market 88.625 per troy oz.

Sodium: 16.50, c.l.; 17.00 l.c.l.

Tantalum: Rod, $60 per lb; sheet, $55 per lb.

Tellurium: $1.65-1.85 per lb.

Thallium: $7.50 per lb.

Tin: Straits, N. Y., spot and prompt, 94.50.

Titanium: Sponge, 99.3+ % grade A-1 ductile (0.3% Fe max.), 2.05; grade A-2 (0.5% Fe max.), $1.85 per lb.

Tungsten: Powder, 98.8%, carbon reduced, 1000-lb lots, $3.15 per lb nom., f.o.b. shipping point; less than 1000 lb, add 15.00; 99+ % hydrogen reduced, $3.85.

Zinc: Prime Western, 10.00; brass special, 10.25; intermediate, 10.50, East St. Louis, freight allowed over 0.50 per lb. New York basis, add 0.50. High grade, 11.00; special high grade, 11.25 deld. Diecasting alloy ingot No. 3, 13.75; No. 2, 14.75; No. 5, 14.25 deld.

Zirconium: Sponge, commercial grade, $5-10 per lb.

(Note: Chromium, manganese, and silicon metals are listed in ferroalloy section.)

SECONDARY METALS AND ALLOYS

Aluminum Ingot: Piston alloys, 24.00-24.50; No. 12 foundry alloy (No. 2 grade), 21.25-21.50; 5% silicon alloy, 0.60 Cu max., 24.00-24.25; 13 alloy 0.60 Cu max., 24.00-24.25; 195 alloy, 24.25-25.50; 108 alloy, 21.75. Steel deoxidizing grades, notch bars, granulated or shot: Grade 1, 22.75; grade 2, 21.25; grade 3, 20.00; grade 4, 17.25.

Brass Ingot: Red brass, No. 115, 25.25; tin bronze, No. 225, 34.00, No. 245, 28.75; high-leaded tin bronze, No. 305, 29.25, No. 1 yellow, No. 405, 20.75; manganese bronze, No. 421, 23.00.

Magnesium Alloy Ingot: AZ63A, 37.50; AZ91B, 37.50; AZ91C, 41.25; AZ92A, 37.50.

NONFERROUS PRODUCTS

BERYLLIUM COPPER

(Base prices per lb, plus mill extras, 2000 to 5000 lb; nom. 1.9% Be alloy.) Strip, $1.80, f.o.b. Temple, Pa., or Reading, Pa.; rod, bar, wire, $1.78, f.o.b. Temple, Pa.

COPPER WIRE

Bare, soft, f.o.b. eastern mills, 30,000-lb lots, 30.355; l.c.l., 30.98. Weatherproof, 30,000-lb lots, 32.53; l.c.l., 33.28. Magnet wire deld., 38.43, before quantity discounts.

LEAD

(Prices to jobbers, f.o.b. Buffalo, Cleveland, Pittsburgh.) Sheets, full rolls, 140 sq ft or more, $17.00 per cwt; pipe, full coils, $17.00 per cwt; traps and bends, list prices plus 30%.

TITANIUM

(Prices per lb, 10,000 lb and over, f.o.b. mill.) Sheets and strip, $8.50-15.95; sheared mill plate, $6.00-9.50; wire, $6.50-11.00; forging billets, $4.10-4.35; hot-rolled and forged bars, $5.25-6.35.

ZINC

(Prices per lb, c.l., f.o.b. mill.) Sheets, $24.00; plate, $12.50-19.20; H.R. strip, $12.50-22.90; $11.00-17.40.

ZIRCONIUM

C.R. strip, $15.90-31.25; forged or H.R. bars, ribbon zinc in coils, 20.50; plates, 19.00.

NICKEL, MONEL, INCONEL

	"A" Nickel	Monel	Inconel
Sheets, C.R.	126	106	128
Strips, C.R.	124	108	138
Plate, H.R.	120	105	121
Rod, Shapes, H.R.	107	89	109
Seamless Tubes	157	129	200

ALUMINUM

Sheets: 1100, 3003, and 5005 mill finish (30,000 lb base; freight allowed).

Thickness Range, Inches	Flat Sheet	Coiled Sheet
0.249-0.136	41.10-45.60	.....
0.135-0.096	41.60-46.70	.....
0.125-0.096	.....	38.50-39.10
0.095-0.077	42.30-48.50	38.60-39.30
0.076-0.061	42.90-50.80	38.80-40.00
0.060-0.048	43.60-53.10	39.40-41.10
0.047-0.038	44.20-55.90	39.90-32.50
0.037-0.030	44.60-60.90	40.30-44.30
0.029-0.024	45.20-52.70	40.60-45.00
0.023-0.019	46.20-56.10	41.70-43.40
0.018-0.017	47.00-53.40	42.30-44.00
0.016-0.015	47.90-54.30	43.10-44.80
0.014	48.90	44.10-45.80
0.013-0.012	50.10	44.80
0.011	51.10	46.00
0.010-0.0095	52.60	47.40
0.009-0.0085	53.90	48.90
0.008-0.0075	55.50	50.10
0.007	57.00	51.60
0.006	58.60	53.00

ALUMINUM (continued)

Plates and Circles: Thickness 0.250-3 in., 24-60 in. width or diam., 72-240 in. lengths.

Alloy	Plate Base	Circle Base
1100-F, 3003-F	41.70	46.50
5050-F	42.80	47.60
3004-F	43.80	49.50
5052-F	44.40	50.20
6061-T6	44.90	51.00
2024-T4	48.60	55.40
7075-T6*	56.40	64.00

*24-48 in. width or diam., 72-180 in. lengths.

Screw Machine Stock: 30,000 lb base.

Diam. (in.) or across flats	Round 2011-T3	Round 2017-T4	Hexagonal 2011-T3	Hexagonal 2017-T-4
Drawn				
0.125	76.20	73.20	....	....
0.156	64.20	61.40	....	....
0.172	....	61.40	....	....
0.188	64.20	61.40	....	79.60
0.203	64.20	61.40	....	....
0.219-0.234	61.00	59.50	....	....
0.250	61.00	59.50	88.40	75.90
0.266-0.281	61.00	59.50	....	....
0.313	61.00	59.50	81.40	72.20
0.344	60.50	....	81.40	....
Cold-Finished				
0.375-0.547	60.50	59.30	72.80	67.80
0.563-0.688	60.50	59.30	69.10	63.50
0.719	....	57.70	....	....
0.750-1.000	59.00	57.70	62.90	59.70
1.063	59.00	57.70	....	57.60
1.250-1.500	56.60	55.40	60.80	57.60
Rolled				
1.563	55.00	53.70	....	....
1.625-2.000	54.30	52.90	59.60	55.50
2.063	....	51.40	....	....
2.125-2.500	52.80	51.40	....	55.50
2.500-3.000	51.20	49.70	....	55.50
3.250-3.375	....	49.70	....	....

Forging Stock: Round, Class 1, random lengths, diam. 0.688-8 in., "F" temper: 2014, 41.50-54.30; 6061, 40.90-54.30; 7075, 42.90-56.30; 7079, 43.40-56.80.

Pipe: ASA schedule 40, alloy 6063-T6, standard lengths, plain ends, 90,000-lb base, per 100 ft.

Nom. Pipe Size (in.)		Nom. Pipe Size (in.)	
¾	$18.60	2	$ 57.40
1	29.35	4	157.60
1¼	39.75	6	282.95
1½	47.50	8	425.80

Extruded Solid Shapes:

Factor	Alloy 6063-T5	Alloy 6062-T6
9-11	45.40-47.00	58.60-62.80
12-14	45.70-47.20	59.30-63.80
15-17	45.90-47.90	60.50-65.50
18-20	46.50-48.30	62.50-68.10

MAGNESIUM

Sheet and Plate: AZ31B standard grade, 0.32 in., 103.10; .081 in., 77.90; .125 in., 70.40; .188 in., 69.00; .250-2.0 in., 67.90. AZ31B spec. grade, .032 in., 171.30; .081 in., 108.70; .125 in., 98.10; .188 in., 95.70; .250-2.00 in., 93.30. Tread plate, 60-192 in. lengths, 24-72 in. widths; .125 in., 74.90; .188 in., 71.70-72.70; .25-.75 in., 70.60-71.60. Tooling plate, .25-3.0 in., 73.00.

Extruded Solid Shapes:

Factor	Com. Grade (AZ31C)	Spec. Grade (AZ31B)
6-8	69.60-72.40	84.60-87.40
12-14	70.70-73.00	85.70-88.00
24-26	75.60-76.30	90.60-91.30
36-38	89.20-90.30	104.20-105.30

NONFERROUS SCRAP

DEALER'S BUYING PRICES

(Cents per pound, New York, in ton lots.)

Aluminum: 1100 clippings, 12.00-12.50; old sheets, 9.00-9.50; borings and turnings, 5.00-

BRASS MILL PRICES

	MILL PRODUCTS a				SCRAP ALLOWANCES f		
	Sheet, Strip, Plate	Rod	Wire	Seamless Tubes	Clean Heavy	Rod Ends	Clean Turnings
Copper	48.13b	45.36c	....	48.32	21.000	21.000	20.250
Yellow Brass	42.69	29.53d	43.23	45.60	16.125	15.875	14.500
Low Brass, 80%	44.90	44.84	45.44	47.71	17.875	17.625	17.125
Red Brass, 85%	45.67	45.61	46.21	48.48	18.625	18.375	17.875
Com. Bronze, 90%	46.98	46.92	47.52	49.54	19.250	19.000	18.500
Manganese Bronze	50.81	44.91	55.44	....	14.875	14.625	14.125
Muntz Metal	45.19	41.00	....	....	15.125	14.875	14.375
Naval Brass	47.07	41.38	54.13	50.48	14.875	14.625	14.125
Silicon Bronze	52.84	52.03	52.88	54.77	20.625	20.375	19.625
Nickel Silver, 10%	57.93	60.26	60.26	....	21.125	20.875	10.562
Phos. Bronze, A-5%	67.17	67.67	67.67	68.85	21.875	21.625	20.625

a. Cents per lb, f.o.b. mill; freight allowed on 500 lb or more. b. Hot-rolled. c. Cold-drawn. d. Free cutting. e. Prices in cents per lb for less than 20,000 lb, f.o.b. shipping point. On lots over 20,000 lb at one time, or any or all kinds of scrap, add 1 cent per lb.

5.50; crankcase, 9.00-9.50; industrial castings, 9.00-9.50.

Copper and Brass: No. 1 heavy copper and wire, 18.25-18.75; No. 2 heavy copper and wire, 16.25-16.75; light copper, 14.25-14.75; No. 1 composition red brass, 15.25-15.75; No. 1 composition turnings, 14.25-14.75; new brass clippings, 13.00-13.50; light brass, 9.00-9.50; heavy yellow brass, 10.75-11.25; new brass rod ends, 11.00-11.50; auto radiators, unsweated, 11.25-11.75; cocks and faucets, 12.75-13.25; brass pipe, 12.75-13.25.

Lead: Heavy, 7.25-7.50; battery plates, 3.00-3.25; linotype and stereotype, 9.25-9.75; electrotype, 8.50-9.00; mixed babbitt, 9.25-9.75.

Monel: Clippings, 28.00-29.00; old sheets, 25.00-26.00; turnings, 20.00-23.00; rods, 28.00-29.00.

Nickel: Sheets and clips, 42.00-45.00; rolled anodes, 42.00-45.00; turnings, 37.00-40.00; rod ends, 42.00-45.00.

Zinc: Old zinc, 3.00-3.25; new diecast scrap, 2.75-3.00; old diecast scrap, 1.50-1.75.

REFINERS' BUYING PRICES

(Cents per pound, carlots, delivered refinery)

Aluminum: 1100 clippings, 15.50-16.25; 3003 clippings, 15.50-16.25; 6151 clippings, 15.50-16.50; 5052 clippings, 15.00-15.75; 2014 clippings, 15.00-15.25; 2017 clippings, 15.00-15.25; 2024 clippings, 15.00-15.25; mixed clippings, 14.00-14.75; old sheets, 11.50-12.25; old cast, 11.50-12.25; clean old cable (free of steel), 14.25-15.25; borings and turnings, 12.00-13.00.

Beryllium Copper: Heavy scrap, 0.020-in. and heavier, not less than 1.5% Be, 51.00; light scrap, 46.00; turnings and borings, 31.00.

Copper and Brass: No. 1 heavy copper and wire, 20.00; No. 2 heavy copper and wire, 18.50; light copper, 16.25; refinery brass (60% copper) per dry copper content, 17.75.

INGOTMAKERS' BUYING PRICES

Copper and Brass: No. 1 heavy copper and wire, 20.00; No. 2 heavy copper and wire, 18.50; light copper, 16.25; No. 1 composition borings, 17.50; No. 1 composition solids, 18.00; heavy yellow brass solids, 12.50; yellow brass turnings, 11.50; radiators, 14.00.

PLATING MATERIALS

(F.o.b. shipping point, freight allowed on quantities)

ANODES

Cadmium: Special or patented shapes, $1.70.
Copper: Flat-rolled, 41.79; oval, 40.00, 5000-10,000 lb; electrodeposited, 31.25, 2000-5000 lb lots; cast, 36.25, 5000-10,000 lb quantities.

Nickel: Depolarized, less than 100 lb, 114.25; 100-499 lb, 112.00; 500-4999 lb, 107.50; 5000-29,999 lb, 105.25; 30,000 lb, 103.00. Carbonized, deduct 3 cents a lb.

Tin: Bar or slab, less than 200 lb, 113.50; 200-499 lb, 112.00; 500-999 lb, 111.50; 1000 lb or more, 111.00.

Zinc: Balls, 16.00; flat tops, 16.00; flats, 19.25; ovals, 18.50, ton lots.

CHEMICALS

Cadmium Oxide: $1.70 per lb in 100-lb drums.
Chromic Acid: 100 lb, 33.30; 500 lb, 32.80; 200 lb, 32.15; 5000 lb, 31.80; 10,000 lb, 31.30; f.o.b. Detroit.

Copper Cyanide: 100-200 lb, 68.40; 300-900 lb, 66.40; 1000-19,900 lb, 64.40.
Copper Sulphate: 100-1900 lb, 13.70; 2000-5900 lb, 11.70; 6000-11,900 lb, 11.45; 12,000-22,900 lb, 11.20; 23,000 lb or more, 10.70.

Nickel Chloride: 100 lb, 48.50; 200 lb, 46.50; 300 lb, 45.50; 400-999 lb, 43.50; 10,000 lb or more, 40.50.

Nickel Sulphate: 5000-22,000 lb, 33.50; 23,000-35,900 lb, 33.00; 36,000 lb or more, 32.50.
Sodium Cyanide: 100 lb, 27.60; 200 lb, 25.90; 400 lb, 22.90; 1000 lb, 21.90; f.o.b. Detroit.

Sodium Stannate: Less than 100 lb, 75.80; 100-600 lb, 66.80; 700-1900 lb, 64.00; 2000-9900 lb, 62.20; 10,000 lb or more, 60.80.

Stannous Chloride (anhydrous): Less than 25 lb, 165.30; 25 lb, 130.30; 100 lb, 115.30; 400 lb, 112.90; 5200-19,600 lb, 100.70; 20,000 lb or more, 88.50.

Stannous Sulphate: Less than 50 lb, 128.10; 50 lb, 98.10; 100-1900 lb, 96.10; 2000 lb or more, 94.10.

Zinc Cyanide: 100-200 lb, 59.00; 300-900 lb, 57.00.

(Concluded from Page 125)

Campanella & Cardi Construction Co., Hillsgrove, R. I., general contractor; 305 tons, sheets and H-piling to the Bethlehem Steel Co., Bethlehem, Pa.

900 tons, twin highway bridges, Snake River, to Gate City Iron Works, Boise, Idaho; 300 tons of reinforcing also involved; general contract to Hansen & Parr, Spokane, Wash., low at $962,650 on rebids to the Oregon Highway Commission.

450 tons, state highway bridges, including one plate girder, Duncannon Borough, Perry-Dauphin Counties, Pennsylvania, to the Bethlehem Steel Co., Bethlehem, Pa.; C. J. Langenfelder & Sons Inc., Baltimore, general contractor.

350 tons, Priest Rapids Dam project, to Bethlehem Pacific Coast Steel Corp., Seattle.

125 tons, piers, Broadway Bridge, Harlem River, New York, to Bethlehem Steel Co., Bethlehem, Pa.; William Moore Building Corp. and Lopier Construction Co., New York, joint contractors.

115 tons, powerplant, Delaware Power & Light Co., Wilmington, Del., to the Belmont Iron Works, Philadelphia.

STRUCTURAL STEEL PENDING

22,500 tons, superstructures, Bronx and Queens approaches, Throgs Neck Bridge, New York; bids June 18, Triborough Bridge & Tunnel Authority, New York, two contracts.

370 tons, bridge, Androscoggin River, Livermore-Livermore Falls, Maine; also 60 tons, reinforcing bars.

245 tons, viaduct and bridge repairs, truss and girders, West Main Street, Hornell, N. Y.; bids in.

195 tons, bridge, Pompton River, Wayne-Lincoln Park, N. J.; bids June 10, Trenton, N. J.; also 425 tons, steel bearing piles.

REINFORCING BARS . . .

REINFORCING BARS PLACED

1400 tons, Malmstrom Air Base, Great Falls, Mont., to Bethlehem Pacific Coast Steel Corp., Seattle; Peter Kiewit Sons Co. and Sound Construction Co., Seattle, joint contractors.

600 tons, highway mesh, Warwick-West Greenwich, R. I., to A. H. Harris & Sons, New Britain, Conn. (Wickwire-Spencer); Campanella & Cardi Construction Co., Hillsgrove, R. I., general contractor; 75 tons, reinforcing bars to the Plantations Steel Co., Providence, R. I.

520 tons, state highway bridges, Perry-Dauphin Counties, Pennsylvania, schedule No. 2, to Brocker Steel Co.; C. J. Langenfelder & Sons Inc., Baltimore, general contractor.

365 tons, Tukey's Bridge, Portland, Maine, to the Bancroft & Martin Rolling Mills Co., South Portland, Maine; W. H. Hinman Inc., North Anson, Maine, general contractor.

260 tons, Big Delta, Alaska, project, to Bethlehem Pacific Coast Steel Corp., Seattle; Peter Kiewit Sons Co., Seattle, general contractor.

240 tons, state highway bridges, Erie Thruway, Fairview-McKean townships, Pennsylvania, to Jones & McKnight Inc., Pittsburgh; Fred W. Ewing Inc., Corry, Pa., is general contractor.

200 tons, miscellaneous public works and roadwork, Montana and Washington, to Bethlehem Pacific Coast Steel Corp., Seattle.

160 tons, Glasgow Air Field, Montana, to unstated St. Paul, Minn., fabricator; Peter Kiewit Sons Co., Seattle, general contractor.

145 tons, treatment plant, Helena, Mont., to Bethlehem Pacific Coast Steel Corp., Seattle.

REINFORCING BARS PENDING

3780 tons, Navajo Dam, Colorado River storage project, near Farmington, N. Mex.; bids June 19, U. S. Bureau of Reclamation, Farmington; also 255 tons, structural supports.

1975 tons, substructures, Bronx and Queens approaches, Throgs Neck Bridge, New York; bids June 17, Triborough Bridge & Tunnel Authority, two contracts; also 7700 tons, H-piles.

1500 tons, University Properties office building and post office, Seattle; bids May 28.

1500 tons, ocean terminal, Anchorage, Alaska; bids May 29.

1400 tons, Malmstrom Air Base, Montana; bids in.

1200 tons, runway and aprons, Glasgow Air Base, Montana; Peter Kiewit Sons Co., Billings, Mont., low at $13,295,335 to the U. S. Engineer.

700 tons, central library, Seattle; bids June 3; estimated cost $3.5 million.

650 tons, also 85 tons shapes, gates, trash racks, etc., Prineville Dam, Crooked River project, Oregon; bids to Bureau of Reclamation, Prineville, Oreg., June 12.

600 tons, plant sciences building, Washington State College, Pullman; general contract to Johnson, Busbaum & Rauh, Spokane, Wash.

595 tons, highway structures, Natchez Trace Parkway, Hinds-Claiborne counties, Mississippi; bids June 10, Bureau of Public Roads, Florence, Ala.

500 tons or more, 14-story addition, Benson Hotel, Portland, Oreg., general contract to Hoffman Construction Co., Portland, Oreg.

430 tons, Fifth & Union Office building, Seattle; Howard S. Wright Inc., Seattle, general contractor; bids in.

420 tons, highway structures and pavement, Harborcreek-Greenfield-North East Townships, Pa.; bids May 29, Harrisburg; also 980 tons, highway mesh.

300 tons, two Washington State bridges, Kittitas County; bids to Olympia, Wash., June 3.

380 tons, highway structures and pavement.

"FASTER FROM FOSTER"
RAIL
& ALL TRACK EQUIPMENT
Nation's Largest Warehouse Stocks
L. B. FOSTER CO.
PITTSBURGH 30 • ATLANTA 8 • NEW YORK 7
CHICAGO 4 • HOUSTON 2 • LOS ANGELES 5

SURPLUS FURNACES FOR SALE
IPSEM HEAT TREAT FURNACE model T-100-E complete with panel and 750G endothermic gas generator and 250 CFH exothermic generator used only 6 months. HEVI-DUTY ELECTRIC BOX FURNACE, type HD 364820 electric door and control panel. LINDBERG TURBULAR HYDRIZING BOX, type T 367224-HY complete with air-operated door, panel and transformer. Above items available for immediate delivery—can be inspected in owner's plant—at any time!
Contact Mr. Archer . . .
ALLOY PRECISION CASTINGS CO.
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GET CASH NOW
for your new surplus motors, controls and transformers!
AVAILABLE: NEW MOTORS
Over 5,000 new motors in stock from ¼HP to 200HP. Special low prices
Write, wire or phone collect!
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CLASSIFIED

Help Wanted

PROCESS METALLURGIST
Exceptional opportunity available for Metallurgical Engineer with administrative experience in development and production of Flat Rolled Electrical Steels. Send resume of education, experience and availability to Box No. 668, STEEL, Penton Bldg., Cleveland 13, Ohio.

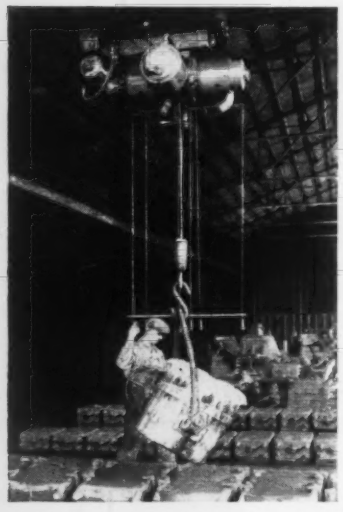
TUBE MILL FOREMAN
Experienced in the operations of electric weld steel tubing mills. Steady job with well established company. Replies confidential. Write Box 669, STEEL, Penton Bldg., Cleveland 13, Ohio.

SHEPARD NILES

HOISTS

CUT HANDLING COSTS

in YOUR plant with the right hoist



FLOOR-OPERATED HOIST

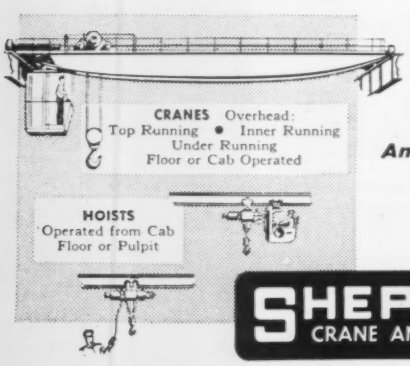
Operator primarily occupied with other duties, uses hoist for fast, efficient short hauls.

CAB-OPERATED HOIST

Cab operator moves loads at high speeds, can quickly spot material for handling.

WHICH Shepard Niles hoist fits your plant's needs . . . a floor-operated hoist where the operator is freed for other duties or a cab-operated hoist where the operator is engaged full time moving loads through the air? Shepard Niles manufactures both types in capacities from 1 to 20 tons.

Send for the descriptive bulletins on both Cab and Floor Operated Hoists . . . or ask that a Shepard Niles representative call — there's NO OBLIGATION.



Building

America's Most Complete Line of Cranes and Hoists Since 1903

SHEPARD NILES
CRANE AND HOIST CORPORATION

2395 Schuyler Ave., Montour Falls, N. Y.

Mill Creek-Greene Harbor, Pa.; bids May 29, Harrisburg; also 320 tons, highway mesh.

300 tons, twin Oregon State Snake River bridges, Hansen & Parr Construction Co., Spokane, Wash., awarded at $952,650 on rebid.

250 tons (also shapes lump sum), Washington State, two highway bridges, Clark County; general contract to John E. Alexander, Seattle.

220 tons, also 65 tons, steel pipe, etc., Emigrant Dam, Rogue River project, Oregon; bids to Bureau of Reclamation, Camp White, Oreg., June 3.

220 tons, two state bridges, Naugatuck, Conn.; bids June 2, Hartford, Conn.; also 135 tons, steel piling, and 35 tons, fabricated structural steel.

167 tons, Washington State highway projects, Snohomish and Klickitat Counties; general contracts, respectively, to John P. Hopkins, Mercer Island, Wash., at $112,989, and Marshall Construction Co., Hermiston, Oreg., at $49,813.

150 tons, two grade crossings, Hartford-Springfield Expressway, Enfield, Conn.; bids June 2, Hartford, Conn.; also 265 tons, steel piling; 375 tons, fabricated structural steel; 125 tons, highway mesh.

135 tons, Washington State highway, King and Snohomish Counties; general contract to Kathman Construction Co., Kenmore, Wash., low at $455,956.

PLATES . . .

PLATES PLACED

5280 tons, sheet steel piling, also 825 tons of used piling, to unstated fabricator, for John Day dam and lock project, Columbia River, by U. S. Engineer, Walla Walla, Wash.

2200 tons, two cone-roof tanks, Northview Dock Co., Riverhead, N. Y., to the General American Transportation Co., Chicago.

2000 tons, new government-furnished sheet steel piling, for Ice Harbor cofferdam; bids for placing to U. S. Engineer, Walla Walla, Wash., about July 2.

1600 tons, oil storage tanks, Irving Oil Refinery, St. John, N. B. to Bethlehem Steel Co., Bethlehem, Pa., by Sparling Tank & Mfg. Co., Toronto, Ont.

1600 tons, 13 tanks, various locations, Pennsylvania, Sinclair Refining Co. to the Nooter Tank Co., Philadelphia.

850 tons, 30-in. water supply pipe, for Port Townsend, Wash., to the Hydraulic Supply Mfg. Co., Seattle.

670 tons, large diameter pipe, reduction plant, Burnside, La., to the Armco Steel Corp., Middletown, Ohio; F. H. McGraw & Co., New York, general contractor.

670 tons, General Stores Supply Office, Navy, Philadelphia, to the U. S. Steel Corp., Pittsburgh; also, 185 tons of carbon bars to the Knoxville Iron Co., Knoxville, Tenn.

PLATES PENDING

9725 tons, eight 15-ft diameter steel penstocks, averaging 670 ft, and four 8-ft diameter sections, steel outlet pipe, averaging 890 ft, Glen Canyon Dam, Colorado River storage project, Arizona-Utah; bids June 10, U. S. Bureau of Reclamation, Denver.

4500 tons, carbon, ½ in., bids to the U. S. Engineer, Chicago, June 2.

350 tons, two fuel storage tanks, Eglin, AFB; bids June 12 to the U. S. Engineer, Mobile, Ala.

3400 tons, 16-ft steel penstock and branch outlet pipes, Trinity Dam, Central Valley project, California; bids June 5, U. S. Bureau of Reclamation, Denver.

850 tons, 30-in. water pipe; Hydraulic Supply Mfg. Co., Seattle, low to Port Townsend, Wash.

300 tons or more, Beverly Park tank, Seattle; Chicago Bridge & Iron Co., low at $286,244.

225 tons, carbon hull plates, grade M, General Stores Supply Office, Navy, Philadelphia; bids June 5.

225 tons, 1-million-gal elevated water tank, White Sands Proving Ground, New Mexico; bids June 4, U. S. Engineer, Albuquerque, N. Mex.

RAILS, CARS . . .

RAILROAD CARS PLACED

Milwaukee, 1000 fifty-ton boxcars and 100 fifty-ton airslide covered hoppers; 500 boxcars to the Pullman-Standard Car Mfg. Co., Chicago, and 600 cars, including hoppers, to the General American Transportation Co., Chicago.

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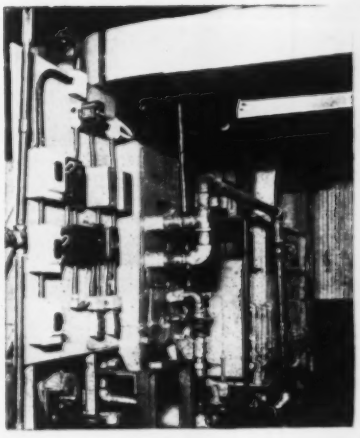

Improve Quenching and You Get Better Heat Treating

● The NIAGARA *Aero* HEAT EXCHANGER transfers the heat from the quench bath to atmospheric air. It never fails to remove the heat at the rate of input, giving you real control of the quench bath temperature. This prevents flashing of oil quenches. In all cases it improves physical properties, saves loss of your product from rejections and gives you faster production, increasing your heat treating capacity. You can put heat back into the quench bath to save the losses of a "warm-up" period.

Savings in piping, pumping and power as well as great savings in cooling water return the cost of the equipment to you in a short time. The Niagara *Aero* Heat Exchanger saves nearly all of the water consumed by conventional cooling methods.

For the complete story of other benefits and savings, write for Bulletins 120 and 132.

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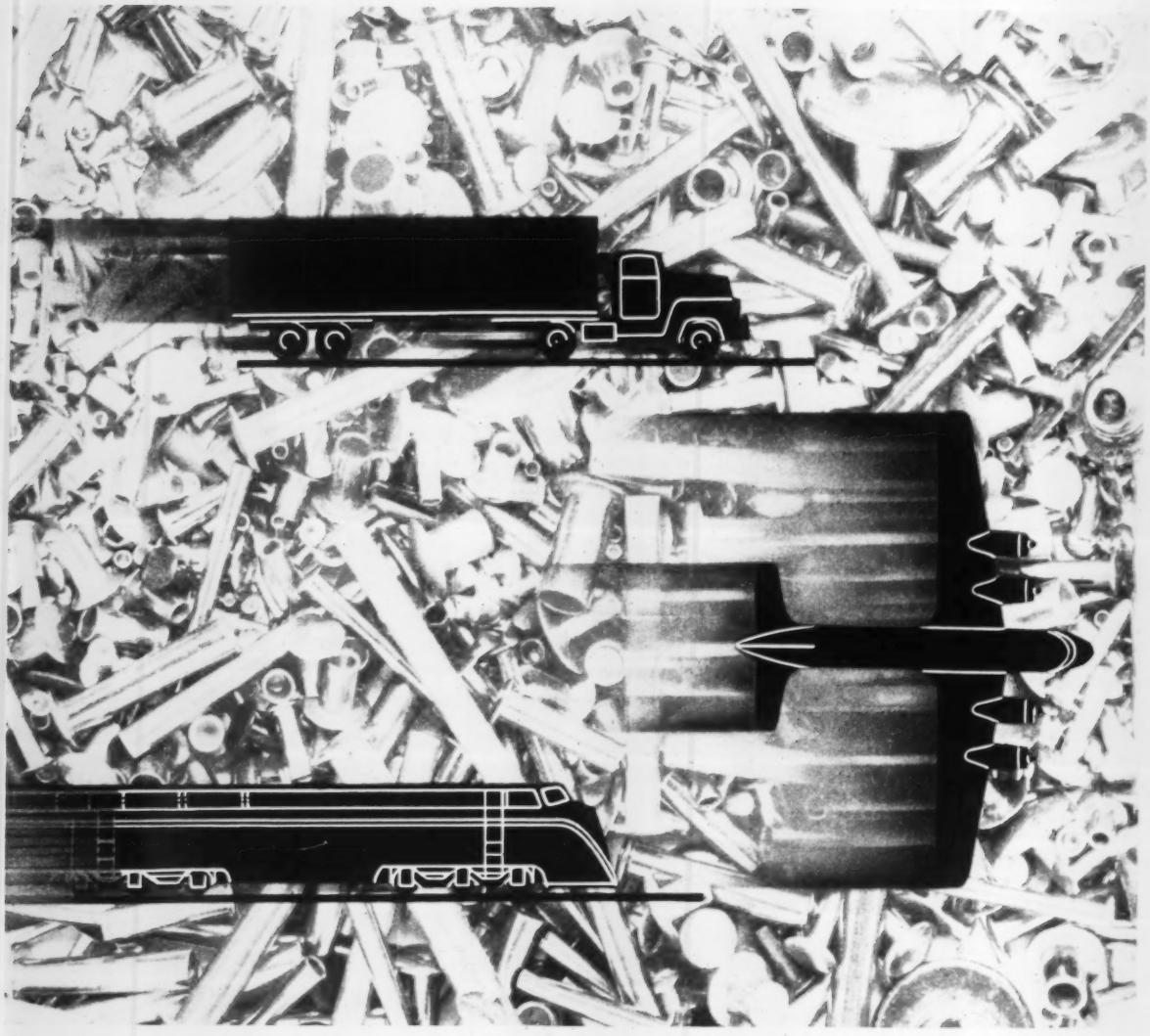
NEW YORK 17, N. Y.
District Engineers in Principal Cities of U. S. and Canada



NEW INVENTORY SYSTEM SPEEDS RIVET DELIVERIES

Judson L. Thomson now keeps 500 million rivets in stock to meet your everyday needs

This new system keeps our inventory high so *you can keep yours low*. It's based on the 800 most-used standard rivets. It's backed up by productive capacity exceeding 20 million rivets a day. When your order comes in, semi-finished rivets are quickly finished to your specifications . . . and delivery is geared to *your production schedules*.

Next time you need rivets, order from Thomson because . . .
TWENTY MILLION A DAY — SPEEDS RIVETS YOUR WAY.

JTL JUDSON L. **THOMSON** 39 Sawyer Rd. MFG. CO., WALTHAM 54, MASS.

Here the Multi-Strand is producing three 3¼" O.D. x .350 copper tubes down to 1½" O.D. x .080.
The machine can be used for copper, brass, aluminum or steel tubes.

MULTI-STRAND COLD TUBE ROLLING MILL

"Great Advancement for Economical Production of Small Diameter Tubing"

This is a breakdown process — producing a copper tube 1½" O.D. direct from a pierced or extruded shell 3 inches in diameter.

The production, considering the heavy reduction of 90%, is equivalent to five cold draw passes and the full production of two triple drawbenches (one 150,000 lbs., one 100,000 lbs.). The rolling method eliminates pointing of tubes, sawing and crane handling. The tubes, without annealing, can go directly to a Bull Block or Drawbench for final reduction.

This revolutionary method, developed by Aetna-Standard, results in a new economical way of producing small diameter tubing. The initial installation is producing tubes in quantity beyond original expectations.

- Much less handling.
- Heavy reductions on three tubes at a time.
- A ten-to-one elongation.
- Saves man-hours, floor space and tube handling.

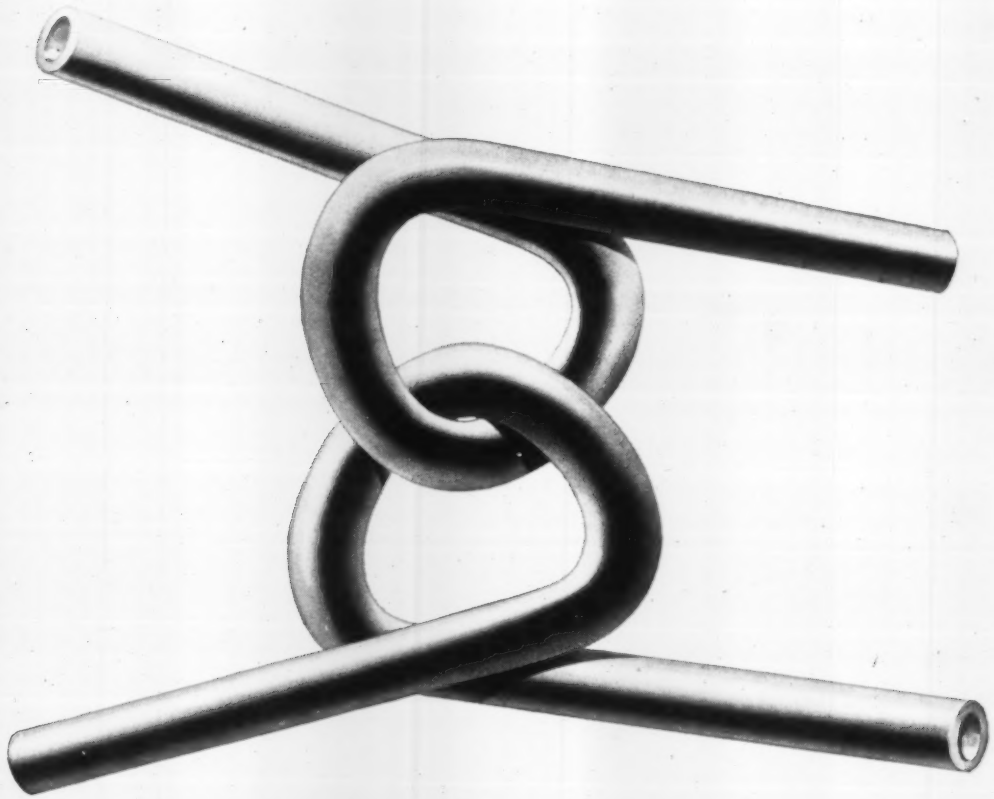
AETNA • STANDARD

THE AETNA - STANDARD ENGINEERING COMPANY

GENERAL OFFICES: PITTSBURGH, PA. • PLANTS: ELLWOOD CITY, PA., WARREN, OHIO • RESEARCH LABORATORY: AKRON, OHIO

CONTINUOUS GALVANIZING LINES • CONTINUOUS ANNEALING LINES • CONTINUOUS ELECTROLYTIC TINNING LINES • SIDE TRIMMING AND SHEAR LINES AND OTHER FINISHING EQUIPMENT • CONTINUOUS BUTT WELD PIPE MILLS • SEAMLESS TUBE MILLS • DRAWBENCHES AND OTHER COLD DRAW EQUIPMENT • ROLLS AND CASTINGS • EXTRUDERS, MILLS, PRESSES FOR RUBBER, PLASTIC AND CHEMICAL

PUZZLED by pressure tube problems?



Let Timken Company metallurgists select the one steel analysis that gives you maximum tube life per dollar

A VARIETY of high temperature steels can handle the combination of pressure, temperature and corrosion that your operation creates. But only *one* steel analysis can handle your problem in the most economical way, give you maximum tube life per dollar.

Timken Company metallurgists can find it for you fast. They're recognized experts in high temperature steels because they're backed up by more than 25 years of research and experience. They've solved hundreds of industry's toughest pressure problems—economically. Ask these experts for help and you can be sure of getting the best possible tube life per dollar.

And we've got the steels to do the trick. You can get Timken® seamless pressure tubes in sizes up to 11″ O.D. x 3¼″ wall—available in all stainless and alloy grades to meet almost any combination of operating conditions. And because we make only electric furnace fine alloy steel, you can be sure of accurate analysis, uniformity from heat to heat, order to order, tube to tube.

Why not save money by letting Timken Company metallurgists solve your pressure problem? The Timken Roller Bearing Company, Steel and Tube Division, Canton 6, Ohio. Cable address: "TIMROSCO".

TIMKEN *Fine Alloy* **STEEL**

TRADE MARK REG. U.S. PAT. OFF.

SPECIALISTS IN FINE ALLOY STEELS, GRAPHITIC TOOL STEELS AND SEAMLESS STEEL TUBING